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THE

EDINBURGH MEDICAL AND SURGICAL JOURNAL:

17116

EXHIBITING

A CONCISE VIEW

OF THE

LATEST AND MOST IMPORTANT DISCOVERIES

IN

MEDICINE, SURGERY, AND PHARMACY.

VOLUME FORTY-FOURTH.

1835.

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1. JULY 1835.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Clinical Report for the Winter Session* 1834-35. By JAMES SYME, Esq. Professor of Clinical Surgery in the University of Edinburgh, and Surgeon to the Royal Infirmary.

IN the Reports which I formerly offered to the public through the medium of this Journal, my object was not merely to convey information of practical utility, but also to show the actual amount of practice in the Surgical Hospital which had been recently established. Cases were therefore selected, fully as much on account of their severity, or other circumstances rendering them of importance, as in respect to the instruction to be derived from them; and the detail with which ordinary operations were related might not unfrequently have incurred the charge of prolixity from practical readers, who were not aware of the peculiar circumstances under which these reports were undertaken. Having now no view but to communicate the observations tending to illustrate the practice of surgery, which my connection with the Royal Infirmary may enable me to collect, I shall not for the future think it necessary to notice any cases except those which afford subject of interesting or useful consideration.

Excision of the Superior Maxillary Bone—Recovery.—

Janet Steel, aged 42, was admitted on the 26th of November. She stated, that, about ten years ago, she received a kick on the face from a cow, which was followed by swelling that never entirely disappeared. In the beginning of last year she began to suffer pain in the seat of enlargement, and at the same time remarked a great increase in the rapidity of growth. The superior molar and bicuspid teeth of the side affected soon afterwards loosened and came away. Within the last few months the progress of the disease had not been so rapid, but it had advanced so far as to be very distressing, and threatened to prove still more serious. The cheek was considerably distended by a tumour springing from the superior maxilla, which, though firm, did not possess the hardness of bone. When the finger was drawn along the lower margin of the orbit, an inequality in its surface was detected, and the floor of the cavity could be felt distinctly elevated. The palate, throughout the whole of its extent on the left side, and also for some distance beyond the mesial plane, was greatly thickened, and extremely irregular on its surface, which exhibited the characters of a malignant ulcer. The patient in all other respects enjoyed good health, and it was, therefore, thought proper to attempt eradication of her formidable and extensive disease, which evidently originated from, and was probably confined to, the superior maxillary bone.

On the 28th, the patient being seated on a chair, a perpendicular incision was made from the inner angle of the eye down through the lip, and another from the convexity of the malar bone to the angle of the mouth. The flap thus formed was dissected up, and the integuments on each side turned back so as to expose the whole surface of the maxillary bone. One blade of the cutting-pliers was then introduced into the nostril, and the other into the orbit, so as to divide the ascending nasal process. A notch was next made with a saw in the malar protuberance, which then readily yielded to the pliers. After this, only the palate and septum of the nose remained to be divided, which was done by first circumscribing the morbid surface in the roof of the mouth with a sharp-pointed straight bistoury, and then cutting through the bone with the pliers. The diseased mass was now easily turned out to the side, and detached from its connections, when it appeared that the tumour had been removed quite entire. It was of moderately firm consistence, and of a yellowish colour, springing from the maxillary bone, filling the antrum, and, by its pressure, had caused absorption as well as displacement of the floor of the orbit. The arteries that required ligature having been tied, the patient was conveyed to bed. An hour after the operation, the cut edges of the integuments were brought into accurate contact by stitches

Edin' Med.& Surg. Jour.

FIGURES ILLUSTRATIVE OF MR SYME'S.
CLINICAL REPORT.

Plate I, p.1, Vol. XLIV.

Fig. 4.

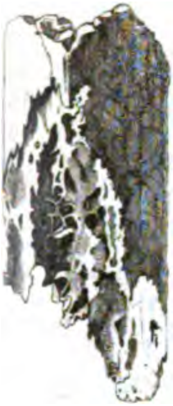


Fig. 3.

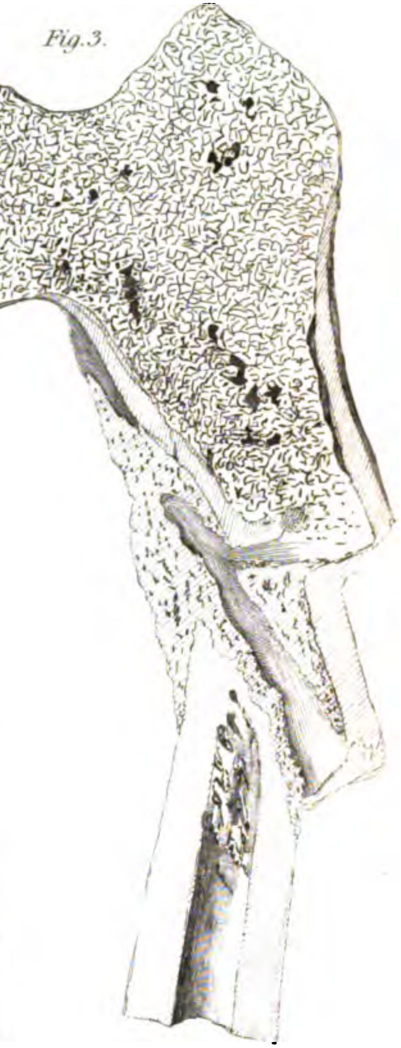


Fig. 2.

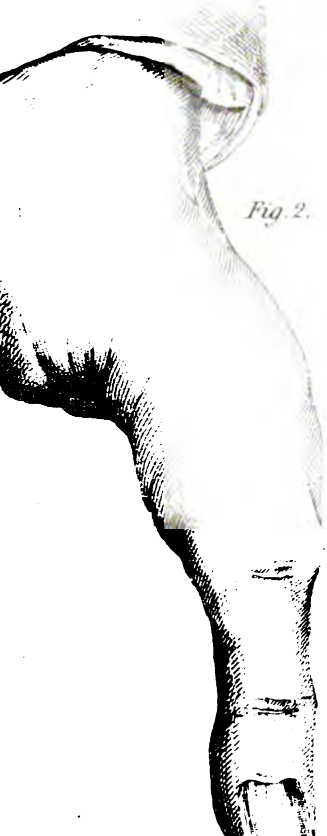


Fig. 1.

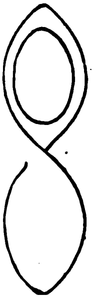
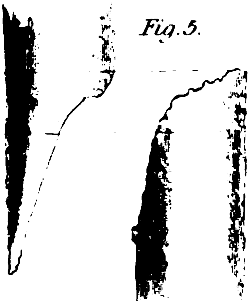


Fig. 5.



of the interrupted suture, except at the two points where the lip was divided, each of which was secured by the twisted suture, a sewing needle being used for the purpose. Cloths moistened with cold water were diligently applied. The wounds healed by the first intention, and the patient was dismissed on the 20th of December with wonderfully little deformity. She continues perfectly well.

Though there are unfortunately many malignant tumours of the face which do not admit of being eradicated, it is satisfactory to find that even those of the most threatening character, which are limited in their osseous connections to the superior maxillary bone, may be removed with complete and permanent relief. In one of my former Reports (1830) there is related the case of a woman from Galashiels, who was afflicted with a soft, red, and most malignant-looking tumour of the upper jaw, which encroached upon the mouth, and distended the cheek. This tumour was removed by excision of the superior maxillary bone, and nearly five years having now elapsed since the time of the operation, the patient may be considered safe from any return of the disease. She has been provided by Mr Nasmyth, with an artificial palate and set of teeth, which render her appearance, mastication, and articulation, hardly at all defective.

To prevent this operation from being misapplied, and losing the confidence which may justly and advantageously be placed in it, the cases admitting of its effectual performance must be carefully distinguished from those in which, from the disease implicating the bones of the nose or the base of the skull, it cannot be of any use. As the external appearance in both these kinds of cases is not unfrequently very similar, the history of the disease should always be attentively considered along with its existing features. Headach, stuffing of the nose, protrusion of the eye, and expansion of the upper part of the face, must always be regarded as unfavourable signs, especially if observed primarily or early in the case. On the other hand, caution is required lest the operation be employed in cases where it is not really necessary, as when the tumour depends on a cyst containing fluid developed in the substance of the bone. The external appearance and consistence of such swellings closely simulate those of fibro-cartilaginous solid tumours, which, of all the morbid growths in this situation, are the most favourable for removal. But the diagnosis between them may in general be easily effected by pressing with the fingers over the surface of the enlargement, in one or more parts of which the bony shell is usually found so thin as to yield and crackle like a piece of parchment. Gensoul * relates a case in which the thick-

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* Lettre Chirurgicale, 1833.

ness of its parietes concealed the existence of a cyst, and led him to undertake excision of the bone, in which he had proceeded so far as to dissect away the cheek from the tumour, when its true nature was discovered. But in all the cases that have come under my observation, there was a part of the shell sufficiently thin to be easily recognized: And the two following may be selected as examples.

A gentleman came from the country to have a tumour of the upper jaw removed. It depressed the palate, encroached upon the nostril, and elevated the cheek. At the most projecting part in each of these situations the tumour, though elsewhere of bony consistence, yielded to pressure, and recovered from it with a crackling sensation. Dr Thomson, Mr Turner, and I, who saw the patient together, agreed that his complaint depended merely upon a cyst, which would contract and be obliterated if freely opened. I accordingly evacuated a quantity of limpid fluid by making a puncture under the lip, after which the swelling contracted, at first rapidly, and afterwards more slowly, until it ceased to occasion any annoyance. Last summer a young lady from North Shields applied to me on account of a tumour of the lower jaw, which extended from the bicuspid teeth to the articulation. It was round and firm, and had been growing for three years, having been preceded by pain in the bone, which led to the extraction of the grinders at the part affected. In the most prominent point of the tumour, where it distended the cheek, and also in the situation of the gum, which was much expanded and flattened, I detected the characteristic yielding and resiliency of the thin osseous, or rather at these parts membranous, shell of a cyst, and did not hesitate to open the tumour by removing an elliptical slice from the alveolar region sufficiently large to prevent any chance of the aperture soon closing. Half a tumblerful of fluid, containing numerous shining scales of cholesterine, was evacuated. The patient suffered no inconvenience, and before long observed a remarkable diminution in the sise of the swelling, which I understand has since gradually become smaller, and now does not equal that of a pigeon's egg.

In such cases it has been advised to employ setons, caustics, and other violent means to destroy the secreting action of the cyst, and induce a healing granulation of the surface; but there is reason to regard this practice as unnecessary and hurtful. That it is unnecessary will appear from the cases just related, to which others attended with a similar result might have been added; and that it is injurious seems probable from the following one. A young man had a large tumour of the lower jaw, which was ascertained to depend on a cyst in the bone. A seton was passed across it from the mouth through the cheek. Contraction followed; but a solid growth afterwards occupied the place of the former cavity. My opinion being then asked, I advised excision of the affected portion of the jaw, which was executed by the gentleman who had operated in the first instance.

Preternatural Aperture in the Nose—Closure by transplanting a flap of Skin.—Ann Millar, aged 25, was admitted on the 3d of September on account of an opening in the side of the nose, which had resulted from exfoliation of the superior maxillary and nasal bones, and existed between four and five years. It was situated just below the commissure of the eyelids, and, being large enough to admit the point of a finger, allowed the septum and other parts in the interior of the nostril to be distinctly visible. The deformity and other inconveniences attending this defect rendered the patient very anxious that an attempt should be made to remedy it; and as the surrounding parts seemed quite healthy it was thought right to comply with her wish.

The dotted line, Fig. 1. Plate I., represents the shape and size of the aperture. A semilunar incision was made on each side of it to remove the round callous margin, and then by means of the other elliptical incision a flap was formed from the cheek. This piece of skin was readily turned round into the opening without being twisted, and all the cut edges were then stitched together by the interrupted suture. Caddis wet with cold water was applied for a few days, and the whole line of incision united by the first intention, leaving hardly any trace either of the aperture or the part from which the flap was transplanted.

This little operation has been described particularly, because the principle followed in its performance in regard to the formation of the flap may be found useful in practice. When a flap of skin is transplanted, it is usually shifted into its new position by twisting the neck which is left for nourishing it. This is apt to occasion a stagnation of the circulation, and requires a subsequent operation for removing the non-adherent fold. In the method just described, which was employed in another case about the same time, this twisting is avoided, and it is believed that it will be found to admit of pretty general application.

Medullary Degeneration of the Eyeball—Excision—Progress of the Disease.—Isabella Thomson, aged 3 years, was admitted on the 6th of January. The pupil of the left eye was much dilated, and of a bright amber yellow colour. The eye looked larger than natural, but whether this depended upon the coats being distended, or upon the ball being merely protruded by a growth behind it, could not be positively ascertained. The child complained of pain in her forehead, and had fallen off in flesh considerably. Her appetite was impaired, and her bowels were moved with difficulty. The first appearance of the disease had been remarked fifteen months before, when a small speck of variable colour appeared in the back part of the eye, without pain or defect of vision, from both of which symptoms she began to suffer in November last.

As no doubt could be entertained that a medullary fungus existed in the eye, the case seemed equally desperate, whether allowed to proceed unchecked or subjected to operation—but as excision is still believed by many to afford a chance of escape, if executed early, before the disease shows itself externally, it was resolved to perform it. On the 10th, I divided the eyelids at their outer commissure, to obtain sufficient room, then cut through the reflexion of the conjunctiva, and lastly, detached the eyeball by a knife guided on the finger.* It now appeared that the morbid growth had proceeded backwards from the sclerotic coat, surrounding the optic nerve, and pressing the eyeball forwards. Some of this soft pulpy substance was taken away, but as it seemed plainly impracticable to remove the whole of it, the attempt was not prolonged. Some pieces of lint introduced into the orbit sufficed to arrest the bleeding, and the child required very little treatment afterwards. Hardly any constitutional disturbance followed, and a remarkable improvement in the general health was soon perceived. Advantage was taken of this temporary improvement to send her home, where, as was to be expected, the disease, I am informed, has again appeared.

In adding another instance of unsuccessful extirpation of the eye for medullary degeneration to the many which are already upon record, I cannot refrain from expressing my conviction that it would be better both for the interests of humanity and the credit of surgery if this operation were entirely abandoned. The melanotic disease of the eyeball has been repeatedly removed, if not with permanent success, at all events with relief of considerable duration; but the true medullary affection, such as is so often met with at an early period of life, does not, I believe, admit of any salutary interference. Cases like that which has just been related do not afford a sufficient argument against the operation, because the existing disease being in them not eradicable, no evidence can be obtained from their result to show that excision may not prove effectual under more favourable circumstances. In the following case, the parts affected were in the most promising state that it is possible to find them.

Robert Scott, aged 3 years, was admitted into Minto House on the 24th of May last. In the pupil of the left eye, seemingly at the back part of the ball, there was an irregular reddish-white appearance. The eye itself was not otherwise altered, nor did the child show any other signs of disease or suffering. An alteration in the colour of the pupil had been first noticed about twelve months before, and had since then gradually become more distinct. The eye was extirpated, and found to contain a medullary tumour springing from the central part of the retina, and occupying about a third part of the cavity. The optic nerve was perhaps a little smaller than usual, but not otherwise altered. The child made a good recovery, but, before the end of many weeks, was perceived to have the vision of the remaining eye impaired. Soon afterwards a white speck was observed through the pupil, which slowly and gradually assumed the distinctive features of the medullary disease. A fungus also at length protruded from the left orbit, and by its pressure causing absorption of the bones, made a way for itself into the mouth.

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* From repeated trials, I am satisfied that the most convenient instrument for the purpose is a pair of probe-pointed scissors curved on the side.

If it could be proved that excision had been successful in a single well authenticated case of medullary tumour of the eye, it would be wrong to refuse the chance of benefit from the operation. But if the result of numerous trials, under every variety of circumstances, has been uniformly unfavourable, it must be cruel to repeat the painful experiment any longer. The only instance of alleged success met with in this country is that recorded by the late Mr Wishart.* The operation was performed on a boy nine years of age, four months after he had received a blow on the eye. "The left eye was dull, and presented a general turbid appearance; the cornea was transparent, but numerous vessels passed into it over the sclerotica. The pupil was moderately dilated and fixed; its margin was slightly serrated. In the posterior chamber an opacity was observed resembling a yellow dusky membrane, lining the whole posterior part of the eyeball, and perceived more distinctly when the eye was viewed laterally." Mr Lawrence has remarked in regard to this case,† that "it is more analogous to those instances of brilliant deep-seated discoloration following serious accidents, than to the unequivocal examples of the medullary fungus." The justice of this suspicion was forcibly impressed upon me by a case which I lately saw with Dr Combe of Leith. The patient was a little boy whose eye had been wounded some weeks previously by a pin-pointed arrow. The appearances presented by it were precisely those described by Mr Wishart, but the brilliant yellow coating at the bottom of the ball, which, had it not been for the history of the case, would certainly have been ascribed to the presence of a malignant growth, was doubtless caused by an effusion of lymph; and not only the external appearances in Mr Wishart's case, but also that presented on making a section of the extirpated eyeball, admit of the same explanation. "The diseased mass into which the retina had been converted, connected only to the optic nerve, floated loosely in various folds, occupying both chambers of the eye."

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* Edin. Med. and Chirurg. Journal, 1823.

† Treatise on Diseases of the Eye, p. 623.

Injury of the Head—Secondary Symptoms—Discharge of matter by operation—Death — Dissection. James Swinton, aged 34, hackney-coachman, was admitted on the 7th of January, soon after being found lying insensible by the policeman on duty at the Calton Hill. It was ascertained that he had gone up to look for a London steam-boat which was expected, and finding that it had arrived, hastened down to get his coach ready for the passengers, when, the rocks being slippery from frost, he had fallen about 16 feet, and lighted with his head on the stone steps at the foot. When brought to the hospital he was very restless and incoherent, as if intoxicated, which, however, he was not, though reported to be of irregular habits. There was a very large wound of the scalp, extending from the root of the nose to the vertex, the edges of which were very uneven and much lacerated. The bone was laid bare to the extent of several inches in length. Soon after admission he became composed and sensible. In the evening the pulse was 84, but the skin was hot, and he complained of great pain in the head. ℥xxvi. of blood were taken from the arm, and gr. v. of calomel, with xv. of *Pulv. Jalap.* given as a purgative.

Next day, though he was much better, it seemed proper to repeat the bleeding to the extent of ℥xvi.

On the third day his pulse was 104, and he complained much of headach. The tartrate of antimony was ordered in nauseating doses.

On the fourth day he was delirious and violent, so as to require the strait jacket. ℥xx. of blood were taken.

On the fifth day he had not slept, and was very restless.

On the sixth day he was very noisy and unruly; passed his stools in bed, and seemed in a hopeless state.

On the seventh day he was more composed, so that the jacket was removed. He had slept a little towards the morning, pulse 96.

During the six following days he went on most favourably. He was sensible and cheerful. The sloughs separated from the scalp; great part of the exposed bone granulated; the pulse, tongue, and appetite were natural.

On the 14th day a great change had taken place. He complained of more pain in the head; the tongue was dry and brown ; skin hot ; pulse 100. He was bled to the extent of ℥x. with considerable relief; and resumed the solution of tartrate of antimony.

During the three succeeding days he had frequent severe rigors, and the wound assumed a dry glassy appearance. As there could be no doubt that suppuration had now taken place within the cranium, while the integrity of the patient's sensorial and voluntary powers seemed to show, that the brain and its immediately investing membranes were not seriously injured, it was thought right to perforate the bone. This was done on the 17th day by means of the *trepan*, which was set on the bare portion of the skull, about the anterior extremity of the sagittal suture. The bone was quite dead and perfectly dry throughout its whole thickness. So soon as it was divided, a quantity of thin, extremely fetid pus, by computation at least ℥ss. gushed out.

During the three following days he had frequent rigors, and was occasionally incoherent. The pulse was very variable, ranging from 84 to 130. But his appearance was on the whole not unfavourable ; he was quite sensible, and the wound looked well.

On the 21st day he became worse, passing his stools in bed ; swallowing and articulating with difficulty ; and suffering from convulsive twitching of the muscles, with hiccup. He died on the 22d day.

On dissection, the dead portion of the bone was found defined by an ulcerated groove on the outer as well as inner surface of the skull. The *dura mater* was covered with puriform lymph for some distance beyond the dead portion of bone, and at one part was so soft and thin, that it scarcely bore the pressure of the forceps. Under the *dura mater*, and nearly to the same extent as the superjacent effusion, there was a similar deposition in the subarachnoid cellular texture. The other contents of the cranium were found in their usual condition.

This case has been selected from many very severe and some fatal injuries of the head, because it was the only one that has occurred for a long while, in which the internal suppuration was so seated and limited, as to afford any promise of advantage from the operation of *trepan*. And, had it not been for the unfortunate morbid action under the *dura mater*, there can be little doubt that the patient would have recovered.

Carotid Aneurism—Ligature of the Artery—Recovery.—Thomas Blair, aged 43, farm-servant, was admitted on the 10th of February. He stated, that, seven weeks before this time, he had been struck down by a horse, behind which he was standing, and was found by his friends lying insensible. It appeared that the shoe had cut his face over the malar projection, and that the point of it, which was very large and thick, had inflicted a blow on the throat a little below the angle of the jaw on the right side. He soon recovered his consciousness, and complained of great pain throughout the injured side of his head and neck, which was much swelled. In the course of ten days the swelling of his face subsided, but that of the neck rather increased, and became more painful; and, as his sufferings seemed constantly becoming more severe, he had been sent to be under my care in the hospital.

The hollow at the upper part of the neck was occupied by a tense swelling, which was felt to be distended in every part at each pulsation of the heart. The patient kept his head bent forward to the right side, and seemed very apprehensive of any alteration in this position. He complained of intense pain in the right side of the head. The right eye appeared nearly a half smaller than the other, and the whole of the face on the same side had an immoveable sort of appearance as if paralyzed. The tongue was protruded with difficulty, and, when withdrawn, evidently moved by the action of the left half alone, the other being quite passive, and merely following the contracted part, but both sides received the impression of taste. The voice was almost entirely lost, and replaced by a rough croaking whisper. From these circumstances, it was concluded that an aneurism of the common carotid artery had resulted from the blow, and caused pressure on the nerves at the root of the neck.

The common carotid was tied on the 18th. The operation was difficult, from the thickness of the patient's neck, the distension caused by the aneurism, and the unfavourable posture in which the head was obstinately maintained. The *omo-hyoideus* having been exposed, and pulled a little downwards, the sheath of the vessels was opened on its tracheal side by lifting up a fold with the forceps, and cutting it with the knife. The artery being thus rendered quite bare for a small extent, without any other disturbance to its position or connections, a strong silk thread was passed round it by the simple curved needle, and tied as tightly as possible. *The patient was instantly relieved from the pain, and had never any return of it.* Not the slightest unpleasant symptom followed the operation. The swelling ceased to pulsate, and gradually diminished; the countenance acquired a more natural expression; the different parts which had been paralyzed regained their mobility; and, lastly, the voice returned. The ligature came away on the 11th March. The patient's strength having been very much reduced, was slowly recovered; but he went home on the 14th April, and is now well.

This case seems interesting from the mode of its origin, the symptoms attending it, and also the circumstance of its being the first instance of carotid aneurism operated on in Edinburgh.

Anomalous Tumour of the Neck—Treatment by Seton and Caustic—Recovery.—Henry Angus, aged 40, mason, was admitted on the 1st of March on account of a large tumour on the right side of the neck. It was nearly twice the size of a turkey's egg, and lay under the sterno-mastoid, before and behind which it projected. The swelling was tense, and, when carefully examined by pressure, allowed fluctuation to be felt distinctly, but no pulsation. He stated, that, eight months before, when descending a stair, he had fallen forwards and struck the crown of his head. He remained insensible until the next day, and was confined to bed for three weeks. Two or three days after the accident, he noticed a small tumour about the size of a pea, deeply seated below the angle of the jaw. It gradually increased without causing any parlicular inconvenience, except from its size, for five months, when it was punctured, upon which a large quantity of fluid escaped, and the swelling subsided. Soon afterwards it returned, and proceeded with accelerating rapidity, attended latterly with pain.

I introduced a trocar at the anterior and lower part of the swelling, and drew off a quantity of thin watery-looking fluid, with scales floating in it. A seton was then conveyed through the opening already made, under the sterno-mastoid, and out behind it, so as to cross the tumour at its longest diameter. No remarkable consequence, either local or general, followed, and the seton, which had been changed daily, was withdrawn on the 12th. The upper and posterior orifice closed soon afterwards, and the lower one seeming insufficient for discharging the matter, which was copious and fetid, was repeatedly dilated with the knife, and lastly, by the caustic potass. The swelling under this treatment gradually contracted, and the patient was dismissed on the 16th of April, with hardly any trace of the complaint.

This case has been particularly related, not only because it presented a very formidable appearance, but because the tumour, though differing in its nature from those usually met with in the cervical region, afforded an example of the *hygroma* which is occasionally met with in this situation.

Abstraction of both Testicles—Recovery.—A. H., aged 28, farm-servant, was admitted on the 2d of January on account of a wound in the scrotum. He stated that, the day before, after drinking for several hours with some of his friends, he had set out to return home, but feeling sick, lay down on the road and fell asleep. He was awakened by pain of the scrotum, and on looking up, saw three men leaving him—at the same time finding his breeches down, and soaked with blood. He then walked with great difficulty to his master's house, which was about a quarter of a mile distant.

The scrotum was much swollen and discoloured. About the middle of it there was an irregularly shaped wound, somewhat more than an inch wide, looking as if it had been inflicted by repeated application of a cutting instrument. When the finger was introduced into this opening, it entered a cavity in the situation of the testicles. But as the sides of this cavity were very thick and dense, it could not be readily determined whether they were constituted by the lacerated organs themselves, or merely the surrounding parts in a swollen state. The patient complained of intense pain in the seat of the injury, and the lower part of the abdomen. He had been bled from the arm previous to admission, and while weak and stupid from the combined effects of drink, pain, and loss of blood, was extremely agitated both in body and mind. The scrotum was kept cool with wet cloths, and supported by a bandage, and an antimonial solution was prescribed.

He continued very restless, and on the 4th complained of pain so much that it was thought necessary to take ℥xviii. of blood from his arm. He had a very anxious look, and hurried breathing, with a profuse thin bloody discharge from the wound. On the 8th, a counter opening was made at the lower part of the scrotum, which gave vent to a quantity of fetid matter, and afforded great relief to the patient. The swelling then gradually diminished, when it became evident that both the testicles were gone, and that the firm swelling which had occupied their place depended on thickening of the *tunica vaginalis*. He suffered little after this, except from weakness and pain in the region of the spermatic cords, and was dismissed cured on the 10th of February.

The judicial authorities investigated the case, in order to discover the perpetrator of this cruel injury, but did not succeed in penetrating the mystery which involved it. Being asked if the patient's story was credible, I stated my opinion, that, however improbable it might seem, there was no impossibility in the affair happening as he related, since, after a sufficient wound had been inflicted on the scrotum, the testicles might be very quickly protruded, and either cut or torn away, as in the ordinary process of gelding young animals. The patient declared that the men he saw were entire strangers to him, and offered to substantiate the whole of his statement by oath; but as his character for truth and other moral qualities was far from being good, it seems, on the whole, most likely that he sustained the injury under circumstances which rendered him unwilling to divulge the real history of the transaction.

Cancer of the Perineum—Excision—Recovery.—Hugh M'Intyre, aged 56, was admitted on the 12th of July on account of a sore in the perineum, which had existed for two years, and been preceded by an induration in the part, also of two years standing. The sore was about three inches in length, and presented the appearance of a deep cleft, extending from the scrotum to the verge of the anus. Its edges were thick and everted; its surface hard and unequal; and its base thick, dense, and quite distinct from the neighbouring parts. The general health was good.

As various means of treatment had been tried without success, both in the Highlands, whence he came, and in the Hospital since his admission, excision was determined upon, and performed on the 23d. The patient having been placed on a table in the position for lithotomy, the whole of the morbid part was carefully dissected from the muscles of the penis and *sphincter ani.* Three vessels were tied at the time, and as many soon after the operation, in consequence of secondary bleeding. The wound healed slowly, but regularly, and he was dismissed cured on the 17th of September.

Chimney Sweepers' Cancer—Excision of the Scrotum—Recovery.—John Robertson, aged 30, was admitted on the 30th of January, on account of a diseased state of the scrotum, which was immediately recognized as the affection described by Mr Pott under the title of Chimney Sweepers' Cancer. Though this disease would seem to be not uncommon in London and other large towns, it is never met with in Edinburgh, except in persons who have begun to suffer from it elsewhere; and it is accordingly so rare here, that during the whole period of my connection with the Infirmary as student and surgeon, I have not seen an instance of it either there or in private. This immunity of the trade in Edinburgh from a complaint which constitutes a serious scourge to it in other places, seems at first sight easily accounted for by the mode of sweeping chimneys here, which is effected not by climbing boys, except in the case of some very few particularly constructed vents, but by letting down from the top a broom, to which a weight is attached, and which, being then alternately drawn up and allowed to descend, completely attains the object in view. But boys seldom climb after the age of puberty, as they then become too large for the purpose; while, according to Mr Pott and other practical writers, the disease is hardly ever observed at an earlier period of life, and usually occurs at a much later one. The theory of the men themselves is, that the body, from being saturated or poisoned, as they express it, by the large quantities of soot they are forced to swallow in their youth, acquires a predisposition to the disease, which, however, seldom actually appears until about the middle period of life. It is worthy of notice, that the individual whose case is now to be related, from being of small stature, and extremely thin wiry make, has never abandoned the practice of climbing, boasting that an aperture 12 inches by 9 is quite sufficient for his passage. He became an apprentice at five years of age in London, and remained there sixteen years, afterwards having no settled residence, but travelling about from place to place. Two years ago a small wart appeared on the scrotum, and in the course of a few months was cut out by a surgeon in Manchester. Other warts began to grow soon after, and at the time of his application here, there was hardly any part of the scrotum quite free from them, though the cicatrix of the former operation remained sound. The largest wart was about the size of a nutmeg, and on the side of the scrotum opposite to it, there was an excavated ulcer, with hard edges, and a purplish coloured surface. He complained of severe shooting pains in the seat of the disease, and extending up along the groins, but had no swelled glands, or any other sign of disease farther than what has been mentioned.

Thinking it useless to remove the warts separately, I resolved to take away the whole of the scrotum, so that as little as possible of the skin predisposed to disease might be left. The operation was performed on the 27th. To lessen the raw surface, and prevent the edges of the integuments from being drawn by the subsequent contraction of the granulating process above the testicles, so as to leave them exposed, I passed some stitches through the cut edges, and tied the threads on a pledget of lint placed over the testicles enclosed in their vaginal coats. This had the desired effect; and, however unlikely it might have appeared at first to any one not acquainted with the extraordinary facility with which wounds of the scrotum, attended with loss of substance, are healed, owing to the laxity of the surrounding parts, the cicatrix when completed was not so large as a sixpence. He was dismissed quite well.

Cancer of the Leg—Amputation—Recovery.—Jane Syme, aged 64, from Arbroath, was admitted on the 12th of November, on account of a large ulcer of the leg, situated on the inner side of the limb, a little below the knee. It was nearly circular in shape, and measured about five inches in diameter. The surface, which extended over the bone, and allowed the probe to pass into its substance, was depressed below the surrounding level; but the edges were elevated and everted. She stated, that, five years ago, while filling a cart with whins, she had her leg slightly hurt by one of the prickles. A scab formed over the wound, and was rubbed off by her worsted stocking, when a sore appeared, which resisted all the applications she could think of. The skill of various practitioners was then tried without success, and the sore became progressively larger and more distressing, being the seat of incessant and intolerable pain.

As the history of the case, together with the appearance and painful sensations of the ulcer, left no room for doubt as to its cancerous nature, amputation was performed above the knee on the 21st, two flaps being formed by transfixing the limb from side to side. No unpromising symptom directly followed the operation, but the case was rendered tedious by the formation of a large abscess in the stump when the wound seemed nearly healed, and the discharge continued so profuse for several weeks, that the greatest apprehensions were entertained for her recovery. Through means of free counter-openings and careful bandaging, the discharge at length diminished; and, though the patient regained her strength slowly even after the wound was healed, she felt able to return home on the 25th of February.

Excision of the Elbow Joint—Recovery.—James Reid, aged 8, from Leith, was admitted on the 15th of October. The right elbow and upper half of the fore-arm were much swelled, the joint allowed of very little motion, and on each side of it there was a sinus leading to the bone. The complaint was referred to a strain received twelve months before, which had been followed immediately by pain, and in the course of three or four months by swelling. The operation was performed in the usual manner, and the patient was dismissed on the 21st of November.

This case has been noticed, in order that I might have an opportunity of stating, that the period which has elapsed since the performance of the earlier operations for excision of joints which I put upon record enables me now to affirm positively that complete and permanent relief may thus be obtained. At the Meeting of the British Association for the Promotion of Science which took place in Edinburgh last September, several patients, who had undergone the operation from three to seven years before, were submitted, along with the diseased parts which had been removed, to the examination of the Medical Section, and the perfect satisfaction then expressed in regard to the result may perhaps tend more to establish the utility of the practice than any thing which I could say in its favour.

Burn of Arm—Mortification of the Hand—Amputation at the Shoulder Joint—Recovery.—Margaret Fyffe, aged 4, was admitted on the 26th of November on account of a severe burn, which she had suffered some days before from her clothes taking fire. From the wrist of the left arm up to the shoulder and across the back, the integuments were completely burnt through their whole thickness, being of a dark-brown colour, and hard leathery consistence. A little below the axilla there was a transverse crack or crevice in the skin, through which the cellular and muscular substance appeared to be disorganised, and there was a similar breach in the fore-arm near the elbow. The hand, which had been quite cold ever since the accident, the day after admission displayed a number of dark-coloured vesications; and where this took place the appearance presented was quite the same as that seen in a subject which has been many weeks in the dissecting-room. It seemed difficult to explain the death of the hand; but dead it certainly was, and amputation afforded the only remedy,—though where the operation should be performed was a question that required consideration. When the state of the integuments and subjacent parts of the arm, so far as it could be ascertained, were taken into account, it appeared unlikely, if the hand merely was removed, that the raw surface left after separation of the sloughs would cicatrize, if the child should be able to struggle through the trial; while, even supposing this possible, the stump could not be expected to prove either useful or seemly. It was therefore resolved to amputate at the shoulder joint, by which means all the most deeply burnt parts would be removed, and no more of the surface left to heal than could be avoided, or than it was likely the strength of the patient might accomplish. She was extremely weak, with a pulse ranging from 140 to 160, but still took her food, and showed no sign of speedy sinking. The operation was performed on the 1st of December by transfixing the joint with a narrow sharp-pointed knife introduced at the lower part of the posterior margin of the axilla, and brought out between the acromion and coracoid processes, carried obliquely, so as to form a flap; and by then cutting round the head of the bone, and outwards on the inner side, so as to form a second flap. The axillary artery was tied, and, to prevent bleeding as much as possible, the cavity between the flaps was filled with pieces of lint, after which a bandage was applied to effect moderate pressure.

The patient bore the operation remarkably well. She seemed to suffer very little from it, and to be greatly relieved by the removal of the injured arm. The lint was taken out on the 3d, and the flap soon adhered. The large ulcer remaining after the slough separated was very slow in healing, and the profuse discharge from it, together with the hooping cough, which she unfortunately took while in the hospital, rendered her very weak. She ultimately recovered, and was dismissed on the 14th April.

On examining the limb, it appeared that the humeral artery, opposite the breach in the skin occasioned by the burn, was obiterated, the coats being nearly gelatinous, and the cavity occupied by a soft pulpy-looking fibrinous substance. The mode of operation that was followed is certainly the easiest and quickest process of disarticulating at the shoulder, and should be preferred when the state of parts allow of its performance.

Laceration of the Hand—Amputation of the Fingers at their carpal joint—preservation of the Thumb.—James Morton, aged 11, was admitted on the 26th December on account of an injury which he had sustained in Leith the same evening from a machine for grinding colours. The middle, ring, and little finger of the right hand were removed, the joints of the fore-finger were laid open, and the bones of it broken, while the integuments and muscles were torn away on both sides of the hand, half way up the metacarpus. As the thumb remained sound, with the exception of having had the nail squeezed off, its preservation seemed very desirable, and though not acquainted with any similar case from which the utility of a thumb so insulated might be inferred, I resolved upon trying the experiment. A semilunar incision was made on each side of the hand, close to the margin of the laceration, and meeting at their extremities. The flaps thus formed were dissected off the metacarpal bones until their articulation with the carpus came into view—the joints were readily divided with a narrow sharp-pointed knife, and after the vessels that bled had been tied, a few stitches were introduced to keep the soft parts in their proper position. The patient suffered little local and no constitutional disturbance, but the thumb appeared so long and uncouth, that doubts were entertained as to the propriety of saving it. The wound healed slowly, owing to the muscles having been bruised more extensively than the integuments, but was completely cicatrized on the 20th February, and though the patient cannot yet speak from experience in any particular instance, there can be little doubt that the thumb will prove very useful to him. He can use it with wonderful freedom, and may easily be provided with an artificial hand, which will increase the use he is able to make of it. Fig. 2 represents the thumb after the cure was completed.

Purpura Hemorrhagica—Amputation of the Great Toe through the Metatarsal Bone—Hemorrhagic tendency—Recovery.—John M'Lachlan, aged 12, was admitted on the 26th December for the removal of a toe which had been diseased for twelve months, and promised no improvement. He was a thin pale boy, but not otherwise unhealthy looking, and had not previously suffered from any illness except the one complained of. On the 28th he suddenly presented all the characters of the most strongly marked *purpura hemorrhagica.* Blood issued from the sore on his foot, and all the mucous surfaces, coagulating in his nostrils and round his teeth, and passing copiously from the urinary organs and rectum. The discharge from the former of the two last mentioned cavities was much more like blood than urine, and unusually copious. Long livid marks, as if caused by the stroke of a blunt weapon, appeared on the limbs; bright purple spots appeared all over the body, and the tongue exhibited a number of ecchymosed blotches. The pulse was extremely frequent, and the stomach rejected food.

Acids, wine, and tonics of different kinds were tried, but as all these means seemed only to increase the sickness and general uneasiness, they were laid aside, nothing being given to the patient except the mildest farinaceous nourishment. Under this treatment he gradually improved, the skin resumed its natural appearance, the gums and nose no longer displayed their bloody incrustation, and the evacuations became free from the sanguineous tinge. The patient regained his appetite, and gradually also his strength, so that he seemed able to suffer the operation. It was performed on the 9th January, by making two semilunar incisions, one on each side of the joint of the great toe, and meeting at their extremities, so as to inclose the morbid integuments, and leave merely sufficient soft parts to come together after the removal of the toe, which was effected by dividing the metatarsal bone with cutting pliers. Three arteries were tied, but as there was still a considerable bleeding which seemed to proceed from the cut surface generally, I filled the cavity with lint, and applied a bandage tightly round the foot. On visiting the patient in his bed about a quarter of an hour afterwards, we found his foot lying in a pool of blood, and lost no time in taking off the dressings and replacing them more effectually; graduated compresses were introduced carefully into the cavity, the foot was bandaged with the utmost tightness consistent with safety; and the limb was then laid on a cradle that raised it above the level of the body. No untoward occurrence happened afterwards, and the patient was dismissed cured on the 2d of February.

Though the astringent and stimulating measures used in this case did not prove useful, it does not follow that depletion would have been advantageous. In such a very weak state of the system, I think it could not be used with safety, though its efficacy under other circumstances is fully established. A robust country blacksmith applied to me last December, on account of purple spots which had appeared on the body generally, but particularly the limbs, in which he frequently felt severe shooting pains. He complained of sore throat and difficulty of breathing, and referred his illness to exposure to cold. He was advised to lose some blood, and performed the operation himself with so immediate relief, that he allowed four pounds to flow, which, though much more than the quantity prescribed, and more probably than was required, had the desired effect. Between such extreme cases as the two which have been mentioned, a great variety occur, and require a modification of treatment corresponding to the characters they present.

Simple Fracture of Os Femoris—Reunion—Death at the end of Two Months—Dissection.—Susan Barr, aged 51, was admitted on the 2d of April in consequence of having sustained a fracture of the left thigh bone, which she stated had happened the preceding evening from being thrown down by a man who ran against her while crossing the street. The injury having been ascertained to be seated in the upper third of the bone, the limb, properly supported by splints, was placed upon a double inclined plane.

On the 15th she was suddenly seized with sickness and vomiting, and then became extremely hot and restless, with dry brown tongue and quick pulse. In three or four days these unpleasant symptoms left her, and on the 20th of May the limb was found sufficiently firm to be freed from restraint. On the 27th she had a rigor and a return of her former symptoms, which continued with progressive aggravation until the 7th of June, when she died.

The fracture had evidently been comminuted, see Fig. III. The broken surfaces remained *quite unconnected*, a soft bloody semifluid substance only lying between them. In the medullary canal there had been a deposition of osseous matter in a sort of granular state, and the external edges of the fracture were united by bridges of dense bone. In this case, then, the *provisional* callus of the French pathologists was nearly completed.

It is a remarkable fact in the history of pathology, that Duhamel's theory of the reunion of fractures, which was founded on an erroneous analogy between the formation of wood and that of bone, has proved to be much nearer the truth than that of Haller and his pupils, who entertained correct opinions as to the formation and nourishment of bone. Duhamel supposed, that, in a case of fracture, the periosteum had its inner layer converted into bone, just as the inner layer of the bark of a graft is converted into wood, and that thus a connecting bridge was formed between the broken bones. When specimens were shown to him of the union extending through the medullary canal, he explained the appearance by alleging, that the *internal* periosteum had suffered a similar change; and when his attention was called to sections of old united fractures, in which a compact mass of bone occupied the seat of the fracture, he was satisfied with supposing, that the external and internal periosteum had united. Rude and crude, and ill-founded as this theory was, it approaches wonderfully near the enlightened views of Breschet and Dupuytren, who have been the first to explain satisfactorily the process by which the every-day accident of fracture is repaired. The reader is no doubt aware that the explanation formerly admitted, of an organizable substance effused from the broken bones into the space between them, and gradually hardened into bone, is quite untenable; and that the process of reunion truly consists, 1. in the formation of a capsule surrounding the fractured extremities by thickening and condensation of the neighbouring tissues; 2. the deposition of bone in this capsule, and in the medullary canal; 3. the growth of bone from the surrounding osseous surfaces until the cavity is completely obliterated. The second stage is generally so far completed in from three to six weeks, that the limb regains its rigidity sufficiently to resist any moderate force, and the cure is then said to be completed; but the real cure requires at least as many months. The case that has just been related affords a striking illustration and confirmation of this process; since, if it were not for the provisional callus or bridges of new bone connecting the external edges of the fracture, the bone would still be flexible, and, in fact, one of the halves is flexible from the section having been accidentally made so as to leave the bridge more on one side than the other.

Fracture of the Patella—Reunion, with no perceptible interval between the broken surfaces.—William Vere, aged 62, on the 14th of October, slipt his foot while descending a stair, and fell forward, striking his right knee. The consequence was a transverse fracture of the patella, for which he was admitted on the 22d. The fracture was very distinct, but the joint, contrary to what usually happens, contained no serous effusion. The limb was laid straight, with the foot slightly elevated, and the ordinary bandage was applied to the knee. The patient proving unruly, recourse was had to a more efficient apparatus, contrived and successfully employed by my assistant, Mr Peddie. This consisted of two pieces of leather, about four inches broad, made to buckle round the limb above and below the fracture, and provided with another set of buckles, by means of which they could be drawn together so far as might seem necessary. The broken surfaces were thus kept in such close contact, that they united without any perceptible interval, and the patient was so satisfied with his apparently perfect recovery, that he insisted upon leaving the Hospital on the 7th of November, though warned of the probable bad consequence of exerting the limb.

Fracture of the Patella—copious effusion into the joint—Reunion with very slight separation of the fragments.—

James Legget, aged 54, was admitted on the 30th of November on account of fracture of the patella, which happened the night before from falling on the edge of the pavement while attempting to raise another man, who had fallen into the gutter through intoxication, he being slightly in the same state himself. The joint was greatly distended with fluid, and remained so, notwithstanding the use of cooling and discutient lotions for several weeks. Nevertheless, by the use of the apparatus just described, the broken surfaces were gradually approximated, and finally united with a very small interval between them, which could be recognized only from the injured patella being a little larger than the other.

Fracture of the Clavicle—Acromial extremity elevated above the sternal one.—There are few fractures, if any, in which the relative position of the broken extremities is so uniformly the same as in that of the clavicle. The depressing effect of the weight of the arm on the acromial end, and the elevating influence of the sterno-mastoid on the sternal portion are so constant and powerful, that of all the fractured clavicles which have come under my observation, I never saw an exception to the general rule but in the following case:

Margaret Crawford, aged 45, was admitted on the 17th February on account of an injury which she had suffered the same evening from the wheel of a carriage passing obliquely over her chest. The clavicle was found to be fractured about its middle; some of the superior ribs of the same side were broken, and the integuments of the thorax and neck were emphysematous. With bleeding, tight bandaging of the chest, and the free internal administration of the tartrate of antimony, she made a good recovery; but the remarkable feature of the case was the position of the broken surfaces of the clavicle. They were completely reversed from the usual one, and required no inconsiderable force to urge them into the same level; and even when the cure was completed, the sternal extremity lay rather below its fellow.

Compound Fracture of the Tibia and Fibula—Exfoliation removed at the end of four months—Recovery.—The patient, a man about 30, stated that, four months before admission, he had suffered a fracture of the leg from falling out of a cart, and that he afterwards tried to walk a few steps, when the broken ends of the bone protruded through his clothes, and was thrust into the dirty road on which the accident happened. Several small exfoliations had come away at different periods after the injury, and the limb at length became firm and straight. But still two sinuses remained in the neighbourhood of the fracture, and the leg gained strength slowly.

On probing the sinuses, it was found that they both led to a loose piece of bone which lay under a mass of new osseous substance that connected the broken extremities. Gentler means having failed, the bridge over the exfoliation was divided, so as to permit its extraction, and then the patient got well.

This case affords a good instance of the effect which loose exfoliations have in delaying the union of compound fractures, and illustrates the propriety of searching for them when the case proves tedious.

Compound Fracture of Tibia and Fibula—Extensive sloughing of integuments—Recovery.—John Murray, aged 52, carter, was admitted on the 12th of November on account of fracture of the right leg, which had been occasioned on the 8th by the wheel of a heavy loaded cart passing over it. The bones were broken obliquely, the tibia four inches, and the fibula one inch from the ankle. There was a small wound on each side of the limb, both of which extended to the bone. The leg, supported by splints, was laid upon an inclined plane. Some blood was taken from the arm, and a solution of tartrate of antimony, with supertartrate of potass prescribed for drink.

Nothing particular occurred during the first few days, the pulse keeping about 100, the tongue remaining clean and moist, and the patient looking well,—though the appearance of the leg was not quite so favourable, as it had become slightly swelled and œdematous. On the 17th, there being considerable lividity of the integuments and vesication, I made several incisions into the cellular substance, which seemed to be sloughing. It then became a question whether the limb should be removed, to give the patient a chance of escaping from the spreading gangrene which appeared to have commenced. As the system was little affected, I thought that the mortification might depend upon the weakness of the part of the limb which had suffered from contusion, and in this case would be limited to it; soothing means, therefore, were employed, and the leg soon presented a more promising appearance. The sloughs did not extend farther than had been expected, and, though the surface that remained after their separation was very slow in healing, the patient retained his good health, and was dismissed on the 8th of March with a straight and strong limb.

The connection between the local and constitutional symptoms of mortification has not yet been satisfactorily explained; but in the present state of our knowledge it is an important fact, that the latter are always proportioned to the intensity of the inflammatory action that precedes the death of the part affected, and may therefore be regarded as a measure of it. Thus, in the case that has just been related, the formidable local appearances, being attended with little constitutional disturbance, were attributed not to the violence of action in the part but to weakness of its power.

Compound Fracture of Tibia and Fibula—Exfoliation of Tibia through its whole thickness—Recovery without shortening of the limb.—John Drummond, aged 18, on the 18th of October, in cleaning a window in Moray Place on the drawing-room floor fell into the area, lighting on his feet, and was immediately sent to the hospital. It appeared that the shock had been sustained chiefly by the left leg, both the bones of which were broken a little below the middle, and had penetrated through the integuments so as to make an opening on each side of the limb. His ankle-joint also was much swelled and misshapen from a partial dislocation of the astragalus backwards. Having remedied the displacement of the articulating surfaces by extension and coaptation, I adjusted the limb on an inclined plane, and endeavoured by the utmost care, as well local as general, to moderate the excited action that was to be expected.

On the 20th the patient became delirious during the night, and continued more or less so, with a very quick pulse, foul tongue, and other unfavourable symptoms, for several days. The cellular substance and periosteum sloughed extensively, and large masses of the dead substance were daily taken away. On the 27th it was ascertained that the *tibia* lay completely denuded in its whole circumference, to the extent of at least four inches, in short, from the fracture down to the epiphysis. It was then explained to the patient and his friends, that attempting to preserve the limb would be attended with great risk of his life, as the strength, which was already much reduced, could hardly be expected to resist the long continued and profuse discharge that must attend the separation of the dead bone; and that, even in the event of recovery, it was very unlikely the limb would be serviceable, owing to the sudden death of so long a portion of the bone. At the same time, an offer was made to do what was possible to obtain a cure without amputation, if the parties most interested were not deterred by the dangers which had been explained to them. It was resolved the trial should be made, and I accordingly carried on the treatment. In a short time the discharge began to diminish, and before long became so inconsiderable as to relieve us from any apprehension in regard to the patient's life, especially as his pulse and tongue were again natural, and the appetite had returned. The bone, too, though still denuded throughout its whole circumference, was no longer bare to nearly the same extent as at first. On the 1st of February the exfoliation represented by Fig. IV. was extracted, and the patient left the hospital on the 24th, the leg being quite straight and of the original length, and having the place of the detached portion of bone occupied by new osseous substance.

This case seems to possess some interest, from affording an instance of the reproductive powers of the osseous tissue under circumstances that do not frequently occur. The exfoliation died as a direct consequence of the injury, and therefore cannot be supposed to have had any share in the formation of its substitute. But if the same extent of bone had been removed at once by mechanical means, it cannot be doubted, from the evidence of established facts, that a permanent deficiency would have remained at the part. And it may be added, that the extensive sloughing of the periosteum placed the origin of the new osseous substance from this source quite out of the question. It is evident that the presence of the dead bone somehow promotes the formation of its substitute; and this fact, however inexplicable, is of much practical importance.

Ununited Fracture of the Humerus—Excision of the ends of the bone—Phlegmatia dolens of left thigh and leg—Recovery.—R. M., aged 50, farmer, was admitted into Minto House* on the 7th of February. He stated, that two months before, his right arm had been broken by the wheel of a cart passing over it, that splints and bandages were applied, and that he was confined to bed for a fortnight. The splints were kept on for four weeks longer, during which he was allowed to walk about with his arm in a sling. It was then found that union had not taken place, and that the arm was perfectly useless, in which state it still remained. On examination, I found that the bone had been broken very obliquely; the lower end of it lay directly under the skin on the outer side of the biceps, and the upper one was felt quite on the opposite side of the limb, imbedded among the muscles. The limb could be bent in all directions at the fractured part, and the broken extremities were so perfectly moveable that it was evident no bond of union existed between them. To ascertain if any disposition to repair the injury still existed, I surrounded the limb very tightly with straps of adhesive plaster, then bandaged it firmly with a roller, and, lastly, applied pasteboard splints. At the end of a fortnight, the state of the arm was found precisely the same as it had been previous to this trial, and it became necessary to decide on some more efficient means of relief.

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* This house, since it ceased to be occupied as the Surgical Hospital, has been employed as a sort of "Maison de Santé," for the reception of surgical cases in that rank of life which renders treatment in a public institution disagreeable, and the remuneration of private professional attendance oppressive. The terms, including every charge, are 10s. per week. This sum defrays the expense of food and attendance, so that I have to account merely for the rent and medicines. The establishment is gradually becoming known, and the increasing resort of patients to it leads me to think that the plan might be more generally adopted with advantage.

I have seen the want of union, both in fracture of the humerus and in that of the fore-arm, attended with hardly any inconvenience, the bone having been broken transversely, and the muscles being equally balanced, so that though the limb was quite flexible at the injured part, in a state of repose, it could execute every exertion it was called upon to perform. In this case, however, owing to the obliquity of the fracture, the limb was entirely powerless, and the patient declared that, rather than be troubled with such a useless load, he would submit to amputation. Before resorting to this last remedy, it seemed proper to try some means for uniting the ends of the bone. The seton was the mildest that could be employed for this purpose, but the case did not appear suited to it, since it is only when the process of reunion has made some progress that the irritation thus occasioned can be of any service. From the extreme mobility of the broken surfaces, it was apparent that nothing lay between them likely to be converted into bone, and therefore the only method of affording relief was limited to the operation of cutting off the ends of the bone and placing them in contact.

On the 24th, an incision about two inches in length was made near the lower end of the bone, which was readily exposed, so as to have the rounded extremity removed by a saw. The other end was then sought for by cutting towards the part where it was felt, from the former wound. The depth of its situation prevented the application of the saw, but the cutting pliers proved sufficient to divide it. A splinter, about two inches in length, was thus detached from the shaft, and as its removal threatened to be attended with difficulty, it was allowed to remain, in the hope that union might be promoted by its presence. (See Fig. V.) Pasteboard splints were applied, with proper bandages, and the patient was confined to bed. Great part of the wound healed by the first intention, a portion of it at the centre only remaining open and discharging a small quantity of matter. The patient suffered hardly any pain, and no constitutional disturbance. The dressing was changed every second day.

On the 8th of March the patient felt rather hot and uneasy, and at ten o'clock at night suddenly complained of intense pain in the left groin and calf of the leg. Very soon afterwards the thigh was observed to be swelled and painful to the touch. Next day the limb was much enlarged from the groin to the ankle. It was tense, elastic, and very sensible of pressure, especially in the course of the *femoral* vein, where an induration was distinctly perceptible. The bowels were moved with difficulty after repeated purgatives and injections. In the evening and during the night, he had very frequent black vomiting. Pulse 150. On the 10th, the vomiting was succeeded by a nearly incessant and violent hiccup. A blister was applied to the epigastrium. On the 11th the hiccup still continued, and the state of the limb remained the same. Twenty leeches were applied to the groin. On the 12th, the pain and tension were diminished, and by the 15th were nearly gone. In addition to the treatment which has been stated, it may be mentioned that mild laxatives were occasionally administered, and evacuations procured regularly by injections. The patient during the attack presented a very sunk appearance, and subsequently became much emaciated. For several weeks he could not assume the erect posture without feeling great pain throughout the affected limb. On the 3d of April he put on his clothes for the first time; and on the 12th it was found that the arm had acquired considerable firmness. On the 28th he went home, a distance of twenty miles, the arm being quite rigid, perfectly straight, and not perceptibly shortened. There was still a very slight discharge of matter, but this I understand has since nearly ceased.

There being only three recorded instances of this operation proving successful in ununited fractures of the humerus since the case of Mr White in 1760, I feel happy in adding another. The cases requiring it must be extremely rare, but when they do occur, it will be satisfactory to know that the cure may be thus accomplished even under circumstances rather unfavourable.

But this case is perhaps still more interesting from the striking example it affords of an attack similar in all respects to the *phlegmatia dolens* * of puerperal females occurring in a male. Other cases of the same kind are recorded, but none that I know of so well marked. There can be no doubt, after the researches of Dr Davis and other modern pathologists, that this very curious affection depends on inflammation of the great venous trunks; and it is not difficult to conceive why this should be apt to happen after the process of parturition. But what led to it in the present case cannot be so readily explained.

Poisonous effects of Mercury externally applied.—Recovery.—James Maxwell, aged 35, had been in the Hospital for some time on account of an extreme tight stricture of the urethra, from which, being at length completely relieved, he proposed to go home on the 30th of March. On the evening of the 29th, he desired one of his neighbours to rub his right hip and thigh with camphorated oil, a bottle of which happened to be in the ward. Instead of this a saturated solution of the nitrate of mercury, which stood in the same place from some fancy of his own, was applied. Intense pain immediately followed, and about one o'clock a severe rigor of half an hour's duration. About this time he passed easily a large quantity of water, presenting a natural appearance. During the five following days he passed no water, and the catheter was introduced repeatedly without allowing any to escape, except two or three teaspoonfuls of mucous-looking fluid destitute of urinous smell. On the night of the 5th of April he passed a few drops of urine, and the night following a large quantity; after which the secretion became natural in quantity and other respects. On the 3d of April he was bled to the extent of ℥xii., and my clerk, Mr Child, detected urea in the serum. The slough formed was superficial, but extensive, and left a sore extremely painful, which healed very slowly. Ptyalism appeared on the third day, and was very profuse, the alveolar ridge of the lower jaw became exposed, and will exfoliate. The patient drank freely during the suppression of urine, he was quite sensible, and lay quiet without any disposition to coma. The pulse was full and soft, ranging from 80 to 90. He regained strength very slowly, but was able to leave the Hospital on the 26th of April to go to the country, where I understand he has been gaining ground since rapidly.

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* An odd error has crept into pathological nomenclature through the use by Dr Davis and others of the title *phlegmasia dolens*, instead of *phlegmatia dolens*. Phlegmatia is a genus of the order Intumescentiae, of the class Cachexiae, of the system of Sauvages, while Phlegmasia is the second order of Dr Cullen's class Pyrexiae.

This case is interesting on several accounts. In the *first* place, it affords an example of the suppression of urine, which results from poisonous doses of the oxymuriate of mercury given internally, occurring from the external application of a mercurial salt. *Secondly*, the suppression of urine was not accompanied with coma. And *thirdly*, the patient recovered after suffering complete suppression of urine for five days.

Oxalic acid taking with an intent to poison—Recovery.—A. M., hackney coachman, was admitted on the 3d of April, soon after swallowing ʒii. of oxalic acid dissolved in a tumbler of water. Free vomiting was induced by sulphate of zinc, and he afterwards took a large quantity of chalk with milk. In the evening he complained of severe burning pain in the abdomen. Thirty leeches were applied, and followed by fomentations. Next day he was easier, and on the 8th he was dismissed quite well.

As the quantity of oxalic acid necessary to prove fatal has not yet been determined, I have thought it right to record this case, which was well authenticated.

Art. II.—*Observations on the Influence of a Tropical Climate upon the Constitution and Health of Natives of Great Britain.* By Henry Marshall, Deputy-Inspector-General of Army Hospitals.

Table I.—Abstract of Mr Annesley's General Returns of the sick of the Native Troops of the Madras Army, for the year 1821.

Strength.	Deaths.	Ratio of deaths per cent.
82,046	1929	2.3

If we deduct the deaths from cholera, which was epidemic in 1821, namely, 830, from the whole number, the annual ratio of mortality by the ordinary diseases will be 1.4 per cent.

Table II.—The following statement will show the Mean Annual Strength of the Native Troops of the Madras Army, the number of Deaths, and the Ratio of Deaths per cent. from the years 1827 to 1830.

	Mean strength.	Deaths.	Ratio of deaths per cent.
1827,	84,128	1362	1.6
1828,	76,224	1129	1.4
1829,	71,945	841	1.1
1830,	67,106	709	1.
Mean of 4 years,	74,850	1010	1.3

Table III.—From the following Returns it may be concluded that the ordinary annual Ratio of Mortality among the inhabitants of two large districts in the Peninsula of India is about 1.3 per cent.

	Population.	Deaths in one year.	Ratio of deaths per cent.
Madura, -	245,654	3933	1.595
Dindigul, -	295,654	3438	1.163
Mean result of both districts,	541,308	7371	1.361

(*Vide* Medical, Geographical, and Agricultural Report of a Committee appointed by the Madras Government, &c. of which Dr Ainslie was President.)

From pretty extensive data, (*Vide* Edin. Med. Journal No. 116 and 117,) it may be inferred, that the mean ratio of mortality among the army in the united kingdom is about 1.5 per cent. per annum, hence it will appear that the ratio of mortality of these different armies in their respective native climates, when not exposed to the hardships of war, is nearly the same. The men of both armies are about the same age, and in almost every other circumstance influencing health, they are similarly situated. So that the difference of the ratio of mortality which occurs among native troops and British soldiers in India, may be attributed principally to the influence of a tropical climate acting upon the constitutions of natives of a temperate region, or in other words, to the change of circumstances to which natives of Great Britain are exposed in an Indian climate. The amount of the increased ratio of mortality among British soldiers in a tropical climate may therefore, to a certain degree, be deemed a measure of the deleterious influence of that climate.

What is the mean ratio of mortality among the King's Army in the East and West Indies? Lieutenant Tulloch, in his very elaborate paper, (United Service Journal, for February 1835,) estimates the mean mortality in India at about 6.3 per cent.; a conclusion which is probably very near the truth. His estimate is corroborated by Dr Burke's paper, (Ed. Med. Journal, Vol. xli. p. 386,) on the mortality among his Majesty's troops in India (Bengal?) from 1826 to 1830, from which it appears that the ratio of mortality during that period was 5.7 per cent. But as soldiers who die by accident or at a distance from head-quarters are sometimes omitted in medical returns, it may be presumed that Dr Burke's account of the ratio of mortality of his Majesty's troops in Bengal is a little understated. I shall, therefore, assume 6. per cent. per annum, as the mean ratio of the mortality of British troops in India, which is about four times that of the mortality of troops in Great Britain, and of native troops in India. Mr Tulloch estimates the mean mortality among troops employed in Jamaica and Honduras, during a period of seventeen years, at 11.5. Fifteen years of the above period the nation was at peace. This estimate of the mean mortality is not quite so high as it is stated by Dr Adolphus in his numerical returns of the diseases and mortality among the troops in Jamaica during a period of three years, as will appear by the following statement: (*Annesley's Researches, &c.*)

TABLE IV.—Statement of the average Strength and the amount of Mortality which occurred among the troops in Jamaica, from 1823 to 1825.

	Mean strength.	Died.	Ratio of deaths per cent.
1823,	2468	143	5.3
1824,	2880	209	6.9
1825,	2682	759	28.2
Mean of 3 years,	2676	370	13.8

With respect to the Windward and Leeward Island station, I have good reason for assuming that the mean ratio of mortality which occurred among the troops employed in that command during a period of nineteen years, or from 1810 to 1828, was 11.3 per cent. per annum.

These statements enable us to estimate the ratio of mortality which is likely to occur among troops employed in our East and West India possessions. It is greatly to be regretted that the data on which these calculations are founded are not more ample, but till such time as materials for constructing returns on a more extended scale are available, these conclusions may be considered sufficiently accurate as an approximation to the truth. It is only by means of statistics that we can estimate the salubrity of different situations, and decide upon the value of the various means which may be adopted for preserving the health of soldiers.

The human constitution seems to be unable to bear great changes of climate with impunity,—whether that change be from a temperate to a tropical climate, or *vice versa*. The term climate is here used in a medical sense, which comprehends a large portion of the agencies which affect the health of man, namely, the temperature and meteorological states of the atmosphere, together with the condition of the soil, surface, elevation, diet, and productions of a country.

The physical constitution and mental prerogative of man enable him to exist, and to perpetuate his species in every climate which produces vegetation, and in a great variety of situations. For this quality, which remarkably distinguishes him from many other species of animals, he is supposed to be chiefly indebted to the enduring properties of his corporeal frame. But, notwithstanding these enduring qualities, with which man is in general more or less endowed, there seems to be a remarkable adaptation of the constitutions of certain races of mankind to the circumstances of particular climates. The indigenous races of tropical climates, as well as the indigenous races of temperate climates, seem to be peculiarly fitted by nature for inhabiting and peopling the respective portions of the globe which they occupy.

When a body of troops is transferred from Great Britain to a tropical climate, India for example, the men undergo a diminution of muscular power, the sick list increases from 4 or 5, to 10 or 12 per cent. and the ratio of mortality rises from 1.5 to 6 per cent. per annum. British soldiers will surmount considerable fatigue for a short time in equatorial regions, but not by any means with a similar impunity from disease as in this country. Excessive exertions in warm climates, never fail to add greatly to the sick list. M. Coulomb, a celebrated French military engineer, gives a very decided opinion upon the diminished muscular power or endurance of fatigue of Europeans in warm climates. He says, " I have executed extensive works at Martinique by troops when the thermometer rarely stood below 68° Fahrenheit, and I have executed the same kind of work in France, by troops, and I am convinced that, under the 14th degree of latitude, where the men are constantly bathed with perspiration, they are not capable of performing half the quantity of work which they can execute in France." [Memoires de l'Institut National, Vol. ii.] M. Coulomb was a man of great accuracy of observation, and, as he had extensive practical experience, his opinion deserves much attention.

Diseases occur of various kinds and degrees little known in the native climate of the troops, which add greatly to the amount of the sick list, and eventually to the mean ratio of mortality. The healthy functions of some of the organs of individuals seem to be intimately connected with the climate in which they were born, and in which their ancestors had for a longer or shorter period resided. Those organs which are most susceptible of the deleterious influence of climate, and the concomitant causes of disease, soon become deranged in their functions, and with those the functions of other organs sympathise, and eventually, structural derangement occurs, which is often incurable. Can art do anything which would materially modify or abate the predisposition to disease among the natives of Great Britain in warm climates? What are the means which ought to be adopted for that purpose? These two questions imperiously demand the attention of a prudent and humane government.

Does the great susceptibility of the natives of high latitudes to disease in a warm climate diminish by length of residence? This question comprehends the specific import of certain terms frequently employed by authors in regard to the human constitution, such as that of being " seasoned in warm climates," and " become assimilated to a warm climate," and to give a decided reply to it would require an extensive series of statistical facts. It is by successive efforts that the science of statistics, in regard to the mean mortality of mankind in particular climates, can be brought to any degree of perfection, and consequently, the first step, however insignificant it is of itself, on a subject of this kind, may be useful. In our endeavours towards the accomplishment of a statistical result, one circumstance is essentially requisite, namely, to arrange the existing materials, so as to indicate the real state of our knowledge on the subject, and consequently to ascertain what is required to be more extensively and accurately observed. For this purpose, I shall adduce the few materials in my possession, although I am well aware that they are so limited as to be totally inadequate for affording specific conclusions of any importance; but if I should by this attempt be so fortunate as to excite others who are better furnished with facts, to arrange and publish them, my object shall be fully attained. To render numerical returns of disease and mortality of much use, they ought to consist of large masses of facts, so as to destroy minor inequalities, and by that means to establish general principles upon an extensive basis.

In the Madras Courier there is a letter published, bearing date, October 21, 1816, in which a statement is given of the mortality which "occurred in the space of three years in a class of the European society, the most exposed to the climate." It is presumed this return has a reference to the officers of the Madras army.

Strength.	Died.	Ratio of mortality per cent.
1366	115	8.4

or not quite 3 per cent. per annum.

Supposing the above were divided into three classes, the casualties have occurred in the following ratios.

1st Class. Under 12 years' residence in India.	2d Class. Above 12, and not exceeding 15 years' residence.	3d Class. Upwards of 15 years' residence.
4.7 per cent. per an.	3.12	2.5

Table V.—Numerical Return of the men belonging to the 13th Regiment, which arrived in India in May 1823, together with the number of Volunteers and Recruits which joined, and the deaths that occurred till the 31st December 1829, being a period of six years and eight months.

Class.	Date of Arrival.	Strength.	Died in 1823.	1824.	1825.	1826.	1827.	1828.	1829.
	1823,	653	45	231	115	37	13	18	12
Volunteers,	1823,	620	3	105	32	15	3	8	6
Recruits,	1824,	13	...	2	4	...	1	...	...
Recruits,	1826,	600	...	...	...	79	26	52	48
Volunteers,	1826,	29	...	...	...	3	...	1	1
Recruits,	1827,	135	...	...	...	...	17	15	30
Volunteers,	1827,	7	...	...	...	...	...	...	...
Recruits,	1828,	34	...	...	...	...	...	...	1
Volunteers,	1829,	20	...	...	...	...	...	...	6
	Total,		48	338	151	134	50	94	104

The mean annual mortality of the 13th Regiment from the year 1823 to 1829 (seven years) was 19.6 per cent.

TABLE VI.—Showing the Annual Decrement by Death of the 653 men who arrived in India with the Head-Quarters of the 13th Regiment in 1823.

	Strength.	Died.	Ratio of deaths per cent.		Stations where employed.
1823,	653	45	6.9		Calcutta.
1824,	610	231	38.	34.1	Burmese territory.
1825,	379	115	30.3		Do.
1826,	264	37	14.		Berhampore.
1827,	227	13	5.3		Dinapore.
1828,	214	18	8.8		Do.
1829,	196	12	6.1		Do.
1830,	184				

The successive annual strength of this return is somewhat higher than it ought to be, in consequence of the invalids annually discharged not having been deducted, which I was unable to do for want of materials, and this is the case with all the subsequent returns except that of the 19th Regiment.

TABLE VII.—Showing the Annual Decrement by Death of the 620 Volunteers which were received into the 13th Regiment in 1823.

	Strength.	Died.	Ratio of deaths per cent.		Stations.
1823,	620	3	0.4		Calcutta.
1824,	617	105	17.	11.6	Burmese territory.
1825,	512	32	6.2		Do.
1826,	480	15	3.1		Berhampore.
1827,	465	3	6		Dinapore.
1828,	462	8	1.7		Do.
1829,	454	6	1.3		Do.

For the information of non-military readers I may state, that, when a regiment is ordered home from India, the efficient men are commonly permitted to transfer their services to another corps serving in India, and as the transfer is quite voluntary, those individuals who avail themselves of this permission are denominated "Volunteers." This class of men is commonly farther advanced in life than the men which compose corps recently arrived from England, and consequently they are in that respect better able to endure fatigue. This circumstance is rendered evident by comparing the last two tables. The mean annual ratio of mortality of the men which arrived with the head-quarters of the corps during the period they were actively employed in the Burmese territory was 34.1 per cent., while the mortality among the volunteers was 11.6 per cent.

With respect to the mean age of the men of corps at the time they embark for India, I may quote a passage from a memorandum furnished to a Finance Committee of the House of Commons by the Quarter-Master General.

" There are four regiments now (1828) on the point of embarkation for India, and are at this moment composed of men whose average ages are as follows:—26th Regiment, 24 years and 6 months; 58th Regiment, 21 years and 4 months; 61st Regiment, 21 years and 7 months; 72d Regiment, 20 years and 8 months."

TABLE VIII.—Showing the Annual Decrement by Death of the 600 Recruits which joined the 13th Regiment in 1826.

	Strength.	Died.	Ratio of Mortality.	Station.
1826,	600	79	13.1	Berhampore.
1827,	521	26	5	Dinapore.
1828,	495	52	10.5	Do.
1829,	443	48	10.8	Do.

TABLE IX.—Numerical Return of Men belonging to the 45th Regiment, which arrived in Ceylon in July and August 1819, together with the Volunteers and Recruits that joined and the Deaths which occurred till the 31st December 1830, being a period of Eleven Years and Six Months.

Date of Arrival.		Strength.	Died in												
			1819.	1820.	1821.	1822.	1823.	1824.	1825.	1826.	1827.	1828.	1829.	1830.	Total.
July and August,	1819,	716	21	37	24	45	21	89	69	71	32	6	7	5	427
November, .	1820,	5	...	1	...	1	1	2	...	...	...	...	...	...	5
May and June, .	1821,	13	...	...	...	...	1	2	1	2	1	...	...	1	8
	1822.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
January and June,	1823.	10	...	...	...	...	3	1	1	3	1	...	...	...	9
February and July,	1824.	40	...	...	...	...	...	9	9	8	2	2	...	1	31
January, Aug. and Oct.	1825.	175	...	...	...	...	...	...	15	65	20	3	4	1	108
March, Sept. and Oct.	1826,	309	...	...	...	...	...	...	...	31	45	10	15	8	109
June, . .	1827.	200	...	...	...	...	...	..	...	...	19	14	10	7	50
September and October,	1828.	116	...	...	..	...	...	...	...	...	...	5	2	2	9
Feb. March, and Aug.	1829.	32	...	...	...	...	...	...	...	...	...	...	...	1	1
September, .	1830.	27	...	...	...	...	...	..	...	...	...	...	...	...	...
Total,		1643	21	38	24	46	26	103	95	180	120	40	38	26	757

The mean annual ratio of mortality which occurred in this regiment from 1819 to 1830 (twelve years) was 11.5 per cent. Discharged 3 per cent.

Table X.—Showing the Annual Decrement by Death of the 716 Men which arrived in India with the Head Quarters of the 45th Regiment.

	Strength.	Died.	Ratio of Mortality.	Stations.
1819,	716	21	2.9	Kandy—Ceylon
1820,	695	37	5.4	Kandy.
1821,	688	24	3.6	Trincomalee.
1822,	634	46	7.2	Colombo.
1823,	589	21	3.4	Colombo.
1824,	568	82	15.5	Colombo and Kandy.
1825,	479	69	14.4	Kandy—Madras.
1826,	410	71	17.3	Madras—Burmese territory.
1827,	339	32	9.4	Burmese territory.
1828,	307	6	1.9	Moulmeyn.
1829,	301	7	2.3	Do.
1830,	294	5	1.7	Do.

Table XI.—Numerical return of the Men belonging to the Service Companies of the 19th Regiment, which arrived in the West Indies in December 1826, together with the Volunteers and Recruits that joined, and the number of Deaths and Discharges which occurred till the 31st December 1833, being a period of Seven Years.

Date of Arrival.		Strength.	1827.		1828.		1829.		1830.		1831.		1832.		1833.		Total.	
			Died.	Discharg.	Diet.	Discharg.	Died.	Discharg.	Died.	Discharg.	Died.	Discharg.	Died.	Discharg.	Died.	Discharg.	Died.	Discharg.
6th Dec. 1826, Jan.	1827,	556	118	9	14	27	5	9	12	6	8	11	19	4	19	10	195	76
January,	1828,	20	...	...	...	...	...	1	...	...	...	1	2	...	2	1	4	3
November,	1828,	151	...	...	...	...	4	1	4	...	2	...	18	...	7	2	35	3
March,	1829,	1	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
December,	1829,	21	...	...	...	...	...	...	...	...	...	2	...	...	1	1	1	3
December,	1829,	6	...	..	...	...	...	...	...	...	1	...	...	...	...	...	1	...
February,	1830.	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1
May,	1830,	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
January,	1830,	4	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...
July,	1831,	3	...	...	...	...	...	...	...	...	...	...	...	...	..	1	...	1
February,	1832,	3	...	...	...	...	...	...	...	...		...	...	...	...	..	...	...
May,	1832,	51	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2	...
November,	1832,	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total,		822	118	9	14	27	9	11	16	6	11	14	39	5	32	15	239	87

The mean annual ratio of mortality of the Service companies of the 19th Regiment during the period embraced in the above return, (seven years,) was 5.3 per cent.

TABLE XII.—Statement of the annual decrement by death and disabilities of the 556 men which accompanied the Head Quarters of the 19th Regiment to the West Indies.

	Strength.	Died.	Ratio of deaths per cent.	Discharged.	Ratio discharged men per cent.	Stations.
1827,	556	118	21.2	9	1.6	Demerara.
1828,	429	14	3.2	27	6.2	Barbadoes.
1829,	388	5	1.3	9	2.3	Do.
1830,	375	12	3.1	6	1.6	Grenada and St Vincents.
1831,	357	8	2.2	11	3	Do.
1832,	338	19	5.6	4	1.1	Trinidad and Tobago.
1833,	315	19	6	10	3.1	Do.

TABLE XIII.—Numerical Return of the men belonging to the 92d Regiment, which arrived in Jamaica in June 1819, together with the Volunteers and Recruits that joined, and the deaths which occurred till May 1827, being a period of eight years.

Date of arrival in Jamaica.		Strength.	Died in									
Months.	Years		1819	1820	1821	1822	1823	1824	1825	1826	1827	Total.
June,	1819	650	280	22	30	24	8	16	24	10	4	418
May,	1820	56	...	3	4	3	...	5	8	2	...	25
January,	1821	294	...	...	41	26	21	11	57	12	1	169
March,	1822	71	...	...	...	4	2	12	17	1	...	36
January,	1823	4	...	...	...	...	...	1	...	...	...	1
February,	1824	31	...	...	...	...	...	9	8	...	...	17
February,	1825	40	...	...	...	...	...	...	11	1	2	14
February,	1826	60	...	...	...	...	...	...	...	...	1	1
Total,		1206	280	25	75	57	31	54	125	26	8	681

Table XIV.—Showing the Annual Decrement by Death of the 650 men who accompanied the head quarters of the 92d regiment to Jamaica.

	Strength.	Died.	Ratio of deaths per cent.	Mean of seven years.
1819,	650	280	43.	
1820,	370	22	6	
1821,	348	30	8.6	5.6
1822,	318	24	7.5	
1823,	294	8	2.7	
1824,	286	16	6	
1825,	270	24	8.8	
1826,	246	10	4	
1827,	236	4	1.7	

The following return is intended to show the indiscriminate and powerful influence of the cause of endemic fever on some occasions in tropical climates. Intemperance, privations of various kinds, exposure to inclemencies of weather, and great fatigue, contribute much to increase disease, and to augment the rate of mortality; but the strictest temperance, and the greatest precaution in regard to health, are often totally inadequate to guard against the diseases of equinoctial regions.

Statement showing the Strength of the Commissioned Officers and other classes of persons belonging to the 92d Regiment, on its arrival in Jamaica in June 1819, together with the numbers that died from that period till the 31st December of the same year.

Class.	Strength.	Died in six months.	Ratio of deaths per cent.
Commissioned officers,	27	10	37
Officers' wives,	5	4	80
Soldiers,	650	280	43
Wives of soldiers,	60	29	48
Children of soldiers,	70	38	54

Table XV.—Showing the Annual Decrement by death of the 294 Volunteers which joined the 92d Regiment in Jamaica in 1821.

	Strength.	Died.	Ratio of deaths per cent.	Mean of seven years.
1821,	294	41	13.9	10.6
1822,	253	26	10.2	
1823,	227	21	9.2	
1824,	216	11	5.	
1825,	205	57	27.3	
1826,	148	12	8.1	
1827,	136	1	.7	
1828,	135			

It is remarkable that the mean mortality of the volunteers should be about double that of the men who accompanied the head quarters of the regiment to Jamaica, during the period from 1821 to 1828. The volunteers were received from corps which were ordered to Europe, after having served about nine years in Jamaica.

These tables are so limited both in regard to the number of regiments and the period of time they comprehend, that no decided conclusion can be drawn from them respecting the question at issue.

What evidence have we of the alleged comparative exemp-

tion of the progeny of natives of the united kingdom born in a tropical climate from the diseases and ratio of mortality to which their parents were liable? I am not aware of the existence of any statistical information before the public calculated to answer this question. That the offspring of British parents lose the susceptibility of their progenitors to disease, and become assimilated to the constitution of the indigenous races after several generations of unmixed descent and continued residence, has not been satisfactorily proved. The ratio of mortality of the children of British residents in intertropical latitudes is usually considered high, and it is commonly observed, that they require to be removed at an early age to a temperate climate. They are observed also to die of the same diseases which prevail among adults, namely, fever and bowel complaints. Indeed, it is well-known that the progeny of imported inhabitants in some tropical climates are extremely obnoxious to the cause of endemic disease, so much so that they frequently become blighted and stunted in their growth, without the appearance of the pathognomonic symptoms of any specific malady.

Would a colony of the natives of Great Britain keep up their numbers in a tropical climate in which the mean temperature is above 78° or 79° of Fahrenheit? So far as I know there are no facts before the public which would warrant a reply to the above query in the affirmative. The Portuguese and Dutch who colonised extensively in India for two or three hundred years, are gradually disappearing in that country. Unless the births in a colony equal or exceed the number of deaths the strength or general numbers must decrease. Now, we have no reason to believe that the births in a colony of natives of Great Britain in a tropical climate would nearly equal the mean ratio of deaths in the whole population. It may, I think, be inferred from all we know on this subject, that the original migration of particular races of mankind, whether from high to low latitudes, or from low to high latitudes, must have been very gradual. Although man has peopled the surface of the whole earth, he is but little qualified to make rapid transitions from one part to another.

There are several domestic animals which are similarly predisposed to disease in India when they are imported from the united kingdom. Dogs are particularly liable to disease; they soon droop and become excessively thin. Many die before they are six months in India, and only a small ratio survive a few years. They rarely propagate their species. Imported cows and sheep do not thrive. Horses from high latitudes are neither so efficient nor so healthy as in their own country. Animals which are common to a temperate and a tropical climate are perhaps generally smaller in size in equatorial regions than in high latitudes, such, for example, as the sheep, the fox, the hare, and some varieties of the deer kind.

For the purpose of comparing the ratio of mortality which occurs among the natives of the united kingdom employed in the West India Islands, with that of natives of the southern coast of Europe exposed to a similar climate, I have compiled the following return:

TABLE XVI.—Return of the strength of the Regiment of Infantry of Granada, composed entirely of Europeans, and of the number who died during the years 1817 to 1830, being a period of fourteen years. Station Garrison of Puerto Rico.

	Mean strength.	Died.	Ratio of deaths.
1817,	570	23	4.
1818,	520	16	3.
1819,	462	10	2.2
1820,	430	8	2.1
1821,	314	19	6.
1822,	241	6	2.5
1823,	432	18	4.2
1824,	549	25	4.6
1825,	764	53	6.9
1826,	1458	111	7.6
1827,	1437	157	10.8
1828,	1444	75	5.1
1829,	1363	89	6.5
1830,	1270	67	5.3
	11249	877	
Mean of 14 years,	803	48	5.9

This ratio of mortality, (5.9 per cent.,) is little more than one-half of the mean ratio of mortality among British troops in the West Indies. But it may, I believe, be presumed, that the above ratio of mortality is higher than the usual rate among troops in Puerto Rico. During the period included in the return, Spain made some hard struggles to regain possession of her continental territories, and for that purpose the Regiment of Granada furnished many detachments. In such cases the most efficient and healthy men are selected for service; and, as the infirm remain at head quarters, the ratio of mortality is increased.

The Regiment of Granada is recruited in Spain, the southern limit of which is about the 36° of N. Lat. and the mean temperature 66°.2, whereas the southern limit of the united kingdom is 50° N. Lat. and the mean temperature 53.6°. The difference of a climate of 16° of latitude, and 12.6° of temperature, seems to render the Spaniard less susceptible to the deleterious influence of a tropical climate than the inhabitants of Great Britain. But to institute a rigorous comparison in this respect, the troops of the different countries should be employed in the same station. With respect to the progeny of Spaniards in Puerto Rico, the following statement, compiled from Colonel Flinter's account of that island, is very conclusive:

Name.	North lat.	Long. west.	Extent.		Mean temp.	An. fall of rain in inch.	Population in 1828.		Deaths per cent.	Births per cent.	An. increase of popula.
			Length in miles.	Breadth in miles							
Puerto Rico.	18	64.67	90	33	81.3	77	Whites, -	150.311	2.12	3.75	1.63
							Free blacks,	120.487	3.12	5.84	2.72
							Slaves, -	31.874	3.60	5.69	2.

I am not aware of the existence of a similar statistical document in regard to any of the British possessions in the West Indies with which to compare it. A return of the strength, mortality, &c. of the "Tenantry" of Barbadoes would be an interesting document. By the laws of the colony every estate is obliged to maintain a certain number of whites in proportion to its extent. These people are denominated "Tenantry," and they have an indefeasible right for life in a house and garden, on the respective plantations. The militia is chiefly composed of tenantry, but, with the exception of occasional military duties, they live in a state of complete idleness.

The foregoing statistical account of Puerto Rico shows that Spaniards may subsist and perpetuate their kind in that island. The difference in latitude between the south of Spain and Puerto Rico is 18°, and the mean difference of temperature 15°. Colonel Flinter undertakes "to prove that white men equally, as people of colour, born within the tropics, can work in the field as well as the natives of Africa." This observation, it will be noticed, is not confined to the inhabitants of Spain, but embraces by the term "white men" a very extensive range. So far as I know, his opinion has not been practically confirmed with respect to the natives of Great Britain. The difference of latitude between the south coast of England and Jamaica is 32°, and the difference of mean temperature about 28° Fahr.

Colonel Flinter, who served with the British and Spanish armies for a period of twenty years in the West India Islands, says, that "the Spanish soldier suffers less, and the British soldier more, from the effects of the West India climate than those of any other nation. This may partly be attributed to the climate of Spain being warmer than that of England, and partly to the habitual abstinence of the Spanish soldiers." He adds, "It is calculated that the French lose 15 per cent. of their troops (annually?) in the West Indies, and the British a still greater number."

Colonel Flinter is probably right in his opinion regarding the causes of the low ratio of mortality which occurs among Spanish soldiers in the West Indies. As British soldiers have a greater predisposition to disease in a tropical climate than Spaniards, we should devote a corresponding degree of care and attention to whatever means may be calculated to preserve their health. Would a gradual change of climate be beneficial in preparing soldiers for service in the West Indies? For example, would it be advantageous to employ troops in Gibraltar, Malta, or the Ionian Islands, previously to their being sent to Jamaica, or the Windward and Leeward Islands? I fear not; but an answer to this query can be satisfactorily given by statistical facts only: There is no other evidence which can be depended upon.

The habitual abstinence of the Spanish soldier must contribute greatly to lessen the influence of the cause of disease in warm climates. Even in our own army, something may, I hope, be accomplished in checking the irregularities of the soldier, who, it must be confessed, is but too prone to avail himself of the facilities that present themselves in the East and West Indies to gratify his propensities. Much good might be done were the prospects of non-commissioned officers improved, and a system of rewards for exemplary conduct established, and by countenancing savings banks and libraries in regiments. Would it not be a prudent measure to reward a deserving non-commissioned officer with a commission more frequently than has been the usage for some years? The hope of improving our situation in life is so powerful a stimulus to good conduct that it should never be withdrawn. An event of this kind taking place in a regiment must have an excellent effect in encouraging good men, whose example would have a beneficial influence upon individuals more disposed to commit irregularities. If we wish to engage a class of recruits superior in mental acquirements and conduct to those who usually offer themselves, we must hold out a higher prize to volunteers.

Much has been done during the present century to improve the condition and preserve the health of soldiers; but much requires still to be effected for similar purposes. Among several measures which might be suggested there is one, which, if well executed, would be of much practical benefit; namely, a brief but comprehensive treatise on the means of preserving the health of soldiers, and of rendering them efficient during a period of peace. A work of this kind would be of incalculable advantage to the junior branches of the medical department, as well as to the non-medical classes of officers of the army. It might embrace in a general way all that body of information which every medical officer who has been long in the service acquires in a greater or less degree, but frequently not until he has committed blunders that might have been obviated had he been earlier and better instructed. This information is not generally communicated in the medical schools, nor has it hitherto been conveyed in a comprehensive manner by books in the English language, although it is essentially necessary for the efficiency of a medical officer. Among the numerous topics which would require to be discussed in a treatise on military *Hygiene* the following should obviously be comprehended: The recruiting of the army, bounty, pay, pensions, rewards, provisions, messing, &c.; barracks, transports and clothing; personal cleanliness; duties and exercise of soldiers; schools and regimental libraries; military discipline, punishments, coercive and corporal; habits of soldiers, comprehending virtues and vices;—the constitution of the medical department and the duties of the medical staff, both general and regimental; military hospitals, moral treatment of the sick, the compilation of numerical returns of sick, and the plan of drawing up reports of diseases, both special and general;—proceedings of boards, sick certificates, &c. together with the general principles of military statistics and medical topography; and, lastly, instructions to young medical officers respecting their general conduct, especially in regard to their superiors, their equals, inferiors, and patients.

ART. III.—*On the Reparation of Fractured Bones.* By GEORGE GULLIVER, Member of the Royal College of Surgeons, Assistant-Surgeon to the Forces.

FEW subjects have exercised the ingenuity of physiologists more than the investigation of the means by which fractures of the bones are consolidated, and the nature and formation of the new production by which this process is accomplished, have accordingly long since engaged a large share of attention.

I propose to give a short account of the history of *callus*, and to examine the accuracy of several opinions concerning the manner of its formation. In the prosecution of this inquiry I shall have frequent occasion to refer, by way of illustration, to various preparations which I have examined in the anatomical collections of this country, and if my observations should sometimes lead me to differ in opinion from anatomists of acknowledged authority, I shall not venture to express it without reference to vouchers of this description.

Although we cannot but admire the patience and zeal with which this subject has been investigated by numerous physiologists, in examining their researches we are surprised by a mixture of so much accuracy of observation with such frequent error in opinion,—a general regard to truth in the record of facts singularly at variance with the fallacy of the conclusions deduced therefrom. It would seem to be a hopeless task to attempt to reconcile the discordant theories of various observers. But the facts in themselves appear sufficiently simple, when divested of the obscurity in which they have been involved by hypothesis. It has been well remarked by Beclard, that those who have recorded the results of their inquiries on the formation of callus mislead only when considered as exclusive, and that they require to be combined in order to afford a comprehensive view of the subject.

If we consider the different circumstances under which many of the researches have been prosecuted,—the different periods to which they have been extended, and the various complications of injury;—how prone inquirers have been to exert imagination in the formation of theory, and to admit as general, or give too great latitude to isolated facts, we shall have no great difficulty in perceiving that many of the discrepancies are rather apparent than real, and that what at first appeared anomalous in the history of this subject may sometimes serve as an illustration to the inquiry. I am disposed to think that the matter has been rather obscured than elucidated by the frequency with which various observers have compared the consolidation of fractures of bone with the reparation of injuries in parts of a different structure. There is a specious ingenuity in many of these analogies which is pleasing and even useful, if admitted with proper caution; but it is only by an accurate examination of fractures in themselves that we can hope to arrive at precise results as to the means by which fractures are repaired.

Haller and his pupil Dethleef, dissatisfied by the crude notion of the older surgeons, that *callus* was a mere inorganic concrete, or a sort of solder,—instituted a series of experiments to investigate the origin, nature, and properties of this substance; and from these experiments it was concluded that *callus* was formed by a glutinous and coagulable juice produced from the vessels of the fractured bone and from the marrow, and that this fluid was effused around the fragments, where it acquired consistency, became cartilaginous, and finally osseous, the agency of the periosteum being considered as of no importance in the process.

Macdonald asserted that the gelatinous matter does not change into cartilage, but that the substance regarded as such is in reality merely a soft flexible bone, which acquires hardness by the addition of phosphate of lime,—an opinion which has been adopted by Dr Craigie. Macdonald supports this view by the difference in chemical composition between the apparently cartilaginous substance and true cartilage; and by the fact, that, in nourishing an animal with madder, the former substance becomes red,—a change which does not take place in the latter.

De Heide of Amsterdam believed that *callus* was not formed from a coagulable juice, but from the blood itself.

John Hunter attributed the formation of *callus* to the successive organization and ossification of extravasated blood. He states, that inflammation takes place in the fractured extremities of the bone, producing a disposition to the absorption of the earthy particles, so as to cause softening and rounding of the fragments,—circumstances which he regarded as conducive to their consolidation.

Mr Howship's observations agree in many respects with those of Hunter. Mr Howship states that the first effect of fracture is the extravasation of blood between the fragments, into the medullary cavity, and also into the periosteum, which thus becomes thickened. The blood coagulates, loses its colouring matter, becomes organized, assumes the appearance of cartilage, and is at length converted into bone. This latter change is first effected external to the fragments and in the medullary canal, so that an osseous case is formed before the complete reunion of the extremities of the fracture,—a fact which was observed about the same time by Breschet, and has since been amply confirmed.

Du Hamel du Monceau, whose researches concerning the growth of wood from the inner layer of the bark of trees are well known, regarded the production of *callus* as a similar process. He considered that the periosteum and medullary membrane were the principal agents in the reparation of fractures; and he describes the periosteum as becoming swollen, elongated from one portion of the fracture to another, in order to become cicatrized and converted into bone so as to complete the union. He informs us, that this is sometimes effected merely by an exterior osseous case, and that in other instances a double case is formed, the second being a sort of plug occupying the central cavity of the bone in the situation of the fracture.

I believe Bordenave was the first who compared the consolidation of fractures to the cicatrization of soft parts. He describes granulations growing from the extremity of one fragment to meet those of another, when they unite and become solid by the deposition of earthy matter in their substance. But in another memoir the facts recorded by this author differ but little from the observations of Haller and Dethleef.

Bichat, Scarpa, and Richerand also ascribed the union of fractures to the production of granulations, and they regarded the process as similar to the healing of soft parts. Bichat states, that the granulations arise from all parts of the divided surface, from the compact and cellular tissues, particularly the latter. Callisen and Bonn held somewhat similar opinions; but the former considered that callus was produced from the vessels of the broken extremities of the bone. Bonn confined himself to such facts as came under his observation in human pathology. He states that callus is at first fleshy, then ligamentous or membranous; but although it acquires the consistence and tenacity of leather, its transition to bone is never preceded by true cartilage.

The observations of John Bell accord in many respects with those of Bordenave, Bichat, Scarpa, and Richerand. Bell informs us that, after the absorption of the extravasated blood, a jelly-like matter is secreted by the vessels of the broken bone, and he regards this secretion as the bone in embryo, possessing in itself the membranes and different vessels with which those of the neighbouring textures soon inosculate. In another place, Mr Bell remarks, that *callus* is a regeneration of bone, organized by the same action as that by which the original bone is formed. It would appear that this author had remarked the effusion of blood and condensation at an early period of the soft parts, so as to form a sort of capsule around the fracture; for Mr Liston possesses a large drawing by Mr Bell, in which these circumstances are clearly marked in the fractured femur. I am indebted to Mr Liston for an opportunity of examining this interesting relic, of the authenticity of which I do not think any doubt could be entertained by those who are acquainted with the peculiar graphic style of Mr Bell's sketches.

Camper observed, that there was an internal as well as an external *callus*; but his fanciful notions concerning the lengthening and separation of the internal osseous plates are now forgotten and disregarded.

Troja relates, that he had seen the extremities of a fractured bone covered in a few days with gelatinous matter, which was gradually converted into cartilage and then into bone. He also observed the swelling of the periosteum to a certain period, and its subsequent diminution in thickness; and he noticed the obliteration of the medullary cavity, near the fracture, by osseous matter.

Boyer seems to have held different opinions concerning the production of *callus*. In that edition of his lectures which was arranged by Richerand, this process is described as analogous to the cicatrization of soft parts, and Boyer ascribes the union to the growth of granulations, which he says are produced without the secretion of pus, from which we may infer that he was alluding to simple fractures. But in a subsequent work, Boyer expresses an opinion, that the periosteum and medullary membrane contribute much to the formation of *callus*; and he is not disposed to admit the production of granulations in the process, since he has not observed these without suppuration,—a state which he considers as adverse to the generation of callus.

The late Mr Wilson, after having expressed an opinion that, allowing for the difference of composition and structure, the process of union in fractures was very similar to what takes place in the healing of soft parts, concluded by teaching that, in the reunion and restoration of bone, nature was guided by the same laws as prevail at its first formation,—an opinion inconsistent with the former one. He states that the old periosteum becomes changed into bone, and is then covered by a new membrane.

Meckel informs us, that the process employed by nature in the cure of fractured bones is exactly the same as what takes place in their original growth,—an opinion which has been adopted by Baron Larrey, who further states that the vessels of each fragment establish the union. He describes the ossification as extending from the interior to the exterior, which is one of the circumstances which induces him to consider the agency of the periosteum as of no consequence whatever in the work of reparation. But it may be remarked, that it is in the central point between the extremities of the fracture that the ossification is last completed. This surgeon, moreover, rejects the description of the albuminous or gelatinous substance of modern anatomists, since he has not seen fractures in one of the bones of the fore-arm or leg which were attended with loss of substance, followed by osseous reproduction. The reproduction of bone, however, under such circumstances, is common in the lower animals, and has been repeatedly observed in the human subject, of which a remarkable instance is recorded by M. Contevoz in the Memoirs of the French Academy of Surgery. Professor Syme showed me a case in the Royal Infirmary of Edinburgh in which he had removed from the tibia of an adult male about an inch of the entire diameter of the bone, which had been completely reproduced; and I saw in the practice of Dr Bushe of New York a similar example in the femur of a young man, which was not followed by shortening of the limb equal to the length of that portion of the shaft of the bone removed by Dr Bushe.

In 1819, Breschet published an account of a series of experiments which he had made on dogs, in illustration of the formation of callus. Breschet repeated these experiments soon after in conjunction with Villermé. In 1820, Sanson published an account of the doctrine of Dupuytren concerning *callus*, which generally accords with the observations of Breschet on this subject. It is probable, therefore, that we are indebted to Dupuytren for the conception of the results of these experiments, which appear to be of great value, not only as reconciling some discrepancies of former observers, but also as affording a view of the subject of much interest to the practical surgeon.

These observers allege, that the consolidation of fractures is preceded by important changes in the soft parts, to which, indeed, they consider the process as mainly attributable.

A summary of Dupuytren's observations will exhibit a general view of those of Breschet and Villermé. Dupuytren states, that, if we examine a fracture from the first to the tenth day after the injury, we shall find an effusion of blood around and between the fragments, the neighbouring soft parts in a state of ecchymosis, inflamed, swollen, and the whole condensed around the injury. The periosteum and medullary membrane are torn; the former loses its fibrous texture, swells, becomes inflamed, and a reddish serous fluid is effused into its substance. The medullary membrane undergoes somewhat similar changes, and gradually encroaches on the medullary canal in the situation of the fracture. The marrow assumes a kind of fleshy appearance, and becomes united to its opposing portion, and the torn periosteum also cicatrizes. The extravasated blood is absorbed in a few days, and replaced by a gelatinous substance.

From the tenth to the twenty-fifth day, the swelling of the soft parts in the immediate situation of the fracture becomes more solid, and adheres more intimately to the substance between the fragments, while the muscles resume their natural appearance. The swelling surrounding the fracture is called the *callous tumour*; its texture is like fibro-cartilage, and the fibres are arranged parallel to the axis of the bone. The membrane obliterating the medullary cavity is also converted into a similar texture, and has a like connection with the substance between the fragments. Thus is a beautiful provision made for the security of coaptation in the fractured extremities.

From the twenty-fifth to the fiftieth day the callous tumour gradually becomes cartilaginous and osseous, so that the fragments of the fracture are incased in a firm bony clasp, which is covered by periosteum, which presents no trace of injury. The substance between the fragments has acquired more density, and greater adhesion to the extremities of the fractured bone, but it is yet far from uniting them in a perfect manner. The central plug formed by the medullary membrane becomes a solid osseous cylinder, and thus we find the fracture enveloped in a double osseous case. This case is termed the ***provisional callus***, and we have already seen that the extremities of the fracture remain without bony union in the midst of this solid osseous formation.

In from three to six months, however, the substance between the fragments becomes converted into bone, and this is denominated the *definitive callus*. The medullary canal is now gradually re-established, and resumes its usual condition, while the external case of the provisional callus also disappears, and thus the injured bone returns to its natural state.

It appears that the theory of Dupuytren is partly founded on that of Duhamel; but although many of the observations of Duhamel were very exact, his theory was inadmissible, in as much as he assigned to the periosteum the exclusive agency in the reproduction of bone, assisted, indeed, in some degree by the medullary membrane, which he regarded as an internal periosteum. Dupuytren perceived and avoided this error, which had in truth been corrected by those observers who removed at once the periosteum and portions of bone in the lower animals, when both were found to be simultaneously reproduced. In showing the importance of the periosteum in the reparation of fractures, Dupuytren has proved that it is by no means the only agent in this process, since he has also seen the cellular tissue, the ligaments, and even the muscles and tendons ossify so as to form the provisional callus; a circumstance which has also been repeatedly observed by Cruveilhier and Andral. Dupuytren extended his researches to a much longer period after the injury than former observers. What Duhamel and other physiologists regarded as the completion of union, Dupuytren considered but as a provisionary state to preserve the coaptation of the fragments until the completion of the cure by the formation of the definitive callus. It appears, however, that this fact was observed by Mr Howship, who had remarked how cautious nature was to guard against the least disturbance or motion between the portions of the fracture, by the disposition of ossific matter in the first instance on the surfaces of the bone, round the margin, and within the medullary cavity; and he states that the work advances from either side into the coagulum deposited between the two ends of the fracture.

Sir Charles Bell concludes that nothing but bone can form bone by the continuation of healthy action. In necrosis he states that the old bone begins the new formation before the continued irritation in the centre kills it. A similar opinion concerning necrosis seems to have been entertained some years ago, by the editors of Bertrandi's Surgical Works, also by Leveillé and Richerand, and more recently by Dr Knox and Mr Syme. The latter gentleman remarks in his Probationary Essay, that "all analogy is unfavourable to the supposition, that the vessels of any other organ but bone can form bone, since we have no example of a vascular tissue secreted by one different from itself." From this it would appear that Mr Syme regards the osseous deposits which take place in the different textures of the body as mere inorganic products, which is perhaps generally true, although a sufficient number of observations has not been made to determine the question. It does not seem probable that the bony matter which often forms the uniting medium in fractures of cartilage is an unorganized substance. In injecting the head of a middle aged subject a few years ago with size and vermilion, the injection passed very freely into vessels in the substance of some bony plates situated in the thyroid cartilage; a circumstance which I was led to observe by accident, for I made the injection with a very different object in view.

Mr Phillips has lately published an essay on the union of bone, in which he concludes that bones, like soft parts, cicatrize either by the first or second intention; and the phenomena presented in the reparation of simple fractures, he regards but as so many stages of adhesive inflammation developed in the tissues implicated in the injury.

Thus we have seen the consolidation of fractures successively attributed to the effusion of a glutinous and coagulable juice from the vessels of the broken bone and marrow; to the organization and ossification of extravasated blood; to the ossification of the periosteum and medullary membrane; to the production of granulations as in the healing of soft parts; to a process similar to that by which the original growth of bone is guided; and finally, it has been mainly ascribed to a preliminary change in the neighbouring soft parts.

An attentive consideration of these conclusions, and of the observations from which they were obtained, will make it appear that one of the most fruitful sources of error has arisen from a desire to attribute the formation of *callus* exclusively to a particular texture, or a disposition to limit nature to some single operation in the completion of this work, as if her resources were not infinite. It is not by the vast number of observations, but by the various methods of explaining them, that confusion has arisen.

Haller correctly observed the effusion of a coagulable matter from the osseous fragments, but he was by no means warranted in attributing the work of consolidation solely to a circumstance which formed but a part of the process. The effusion which Haller observed from the broken extremities of the bone was doubtless the lymph which replaces that extravasated blood which Hunter regarded as the nidus of the new ossific matter. Although the experiments of Duhamel afforded abundant proof of the formation of callus by the periosteum and medullary membrane, they did not justify his conclusion, that they were the exclusive sources of this production, since numerous examples might be cited in which there was at once reparation of a portion of bone and periosteum which had been destroyed together.

The observations of Bichat, Richerand, and Scarpa, are accurate expressions of fact when applied to that form of injury in bones which is accompanied with suppuration. Although granulations are not produced in simple fractures, there can be no doubt as to their frequent occurrence in compound fractures, in which we often see granulations sprouting from the surface and extremities of the denuded bone, where they pass into the osseous state. It was probably from the repeated observation of this fact that Larrey and Mr Liston were led to the opinion, that the reparation of fractured bone was entirely effected by its own vessels. The late Mr Wilson, in comparing the consolidation of fractures to the phenomena observable in the original growth of bone, seems to have arrived at this conclusion by an accurate examination of some points of analogy in the reparation of injuries of the bones of the head. Mr Wilson remarks, that in the cranium membrane was first formed, so also in the process of restoration in this part the granulations change into membrane and then into bone, not the least appearance of cartilage being discoverable in any stage of the work. Thus far the analogy is generally true. I may be permitted to remark, however, that I have seen in the parietal bone of an adult subject, the hole made some years previously with a trephine, filled up with a very tough and apparently fibro-cartilaginous substance, quite unlike the structure of this bone at any stage of its formation. But in the cylindrical bones, Mr Wilson further remarks, that reparation is preceded by cartilaginous formation, which he considers another point in the analogy. In the examination of the shafts of the long bones from the earliest period of growth, I have never been able to observe any thing like cartilage; they seem to pass at once from a membrano-gelatinous substance to the osseous state, and I find that a somewhat similar statement has been made by Serres, and Dr Craigie. I do not think that in the growth of the shafts of the long bones any such texture has been observed as that white dense substance which surrounds fractures of these parts at a certain period. This substance resembles in texture and appearance fibro-cartilage or cartilage. Mr Syme possesses an excellent example of it in a fracture of the shaft of one of the long bones of a child ; and in the Museum of the King's College is the *femur* of a young subject, in which the fibro-cartilaginous capsule surrounding a fracture is extremely well-marked. Nor am I aware that in the original growth of bone any substance is produced which is similar in structure and appearance to that tough dense texture which intervenes between the extremities of a fracture after a certain period, and of which there is a good specimen in Mr Syme's cabinet, in a fracture of the upper third of the femur of an adult. Finally, the accurate and extensive observations of Breschet and Dupuytren, which are well founded, particularly to simple fractures, are by no means applicable without exception. In fractures of the bones of the head no such changes as they consider preliminary to reparation occur in the soft parts. There is no provisionary *callus ;* but union seems to be effected, as Mr Mayo remarks, by the direct extension of ossification from one portion of the fracture to the other ; a circumstance, however, which will not appear extraordinary when we consider that Dupuytren regards the first callus as intended to prevent motion between the fragments ; a provision which the immobility of the bones of the head renders unnecessary. Even in these examples, the ultimate consolidation of the fracture seems to follow the general law as to the period which is required for its completion ; for Duvernay, and subsequently Mr Stanley, have informed us that fissures of the skull remain a long time without bony union. There are also other fractures in which the reparative process differs from that described by Dupuytren ; for example, in the neck of the thigh bone, in the patella and olecranon, the formation of the provisionary callus does not appear to take place ; a circumstance which may explain the difficulty with which these parts unite by bony substance, for whenever two portions of bone have to unite by the direct growth of one fragment to the other, as described by Larrey, or, in other words, by the slow unaided formation of the definitive callus, the process requires a long time for its completion, and may be expected to fail altogether unless favoured by complete coaptation and immobility of the fractured surfaces.

Let us now see what facts have been established in the reparation of simple fractures of the shafts of the long bones. In the consolidation of these fractures, then, the following phenomena occur.

1. The periosteum, medullary membrane, and contiguous soft parts are generally lacerated to a greater or less extent, and from the vessels of these parts, as well as from the bone itself, blood is effused around the fragments, between their extremities, and into the texture of the injured soft parts, and this blood soon coagulates.

2. The periosteum, medullary membrane, and other soft parts, particularly the cellular tissue, in the neighbourhood of the fracture, become inflamed, tumefied, and consolidated; the coagulated blood either disappears or loses its colouring matter; and a viscous gelatinous substance, possessing the properties of coagulable lymph, appears and becomes organized.

3. The lacerated periosteum and medullary membrane become cicatrized; they remain much thickened, the former becomes connected with the contiguous indurated cellular tissue, and they assume the appearance of fibro-cartilage or cartilage. The medullary cavity of the bone is nearly obliterated in the situation of the fracture. The swelling in the more superficial soft parts subsides. The substance interposed between the extremities of the fragments is yet delicate, but has acquired some firmness.

4. The apparently cartilaginous periosteum and medullary membrane undergo the osseous transformation, the medullary canal is completely obliterated, and the fracture is encased in a double bony cylinder. The substance between the fragments is tough and leathery, and it adheres more intimately to the fractured extremities.

5. Ossification takes place between the extremities of the fracture; the medullary canal becomes re-established, the adventitious osseous matter external to the fracture disappears, and thus the injured bone resumes its natural condition.

The periosteum is generally lacerated in fractures, and separated more or less from the bone; but I saw a specimen in the King's College of fracture of both bones of the fore-arm of a child in which there was no injury to the periosteum. The effusion and coagulation of blood have been remarked at different periods by De Heide, Hunter, Bichat, and Howship, whose observations were most frequently made on the lower animals. I had an opportunity of examining this circumstance some years ago in the human subject. A middle aged soldier fell into one of the trenches at Fort Pitt and died shortly after. The sternum, radius, femur, and bones of the ankle-joint had suffered fracture. Around the fractured femur and radius the effusion of blood was particularly remarkable, as already described; it had become coagulated, and adhered somewhat tenaciously to the extremities of the fracture, from which the lacerated periosteum was separated to a considerable extent.

The swelling of the periosteum, medullary membrane, and of the soft parts generally around the fracture, have been described with great accuracy by Breschet.

Mr Syme possesses a specimen of fracture in one of the long bones of a child which lived about three weeks after the injury. In this preparation the fibro-cartilaginous capsule investing the fracture is strongly developed; and although the fractured portions are thus retained in exact apposition, the extremities are quite ununited, unless by a very fragile substance like coagulated lymph. The same circumstances are exhibited at a more advanced period in a fracture of the femur of a young subject in the Museum of the King's College; and in the anatomical collection of the University of Edinburgh is a fracture of the humerus of a child, in which the new shell has the appearance of very fine cartilage.

The complete transition of the cartilaginiform capsule to the osseous state, and perfect obliteration of the medullary cavity by new bone in the vicinity of the fracture, are extremely well shown in a humerus, of which a section has been made, contained in the Museum of the Army Medical Department. The preparation has been macerated and dried; and although the fractured portions are firmly encased by an external bony clasp, and an internal plug of similar structure occupies a corresponding extent of the medullary-canal, the extremities of the fracture are separated by a distinct line, no union in this situation having been effected by osseous matter. Indeed, in one of the sections, the ends of the fracture admit of appreciable motion by the employment of a little force. In another specimen in the same collection the ossific deposit in a fibro-cartilaginous substance surrounding a fracture of the clavicle is very distinct.

Mr Liston, in a paper published some years ago, rejects the idea of callus being produced by the periosteum, because he has not seen osseous matter imbedded in the substance of that membrane, but has found the new bone invariably attached to the living part of the old. If a fracture be examined a long time after the injury, the observation of Mr Liston will be found to be generally exact; but at an early period I have had frequent opportunities of seeing new bone in the dense cartilaginiform substance surrounding the fracture, and in some of these examples the new formation might easily be turned off from the old bone without injury to the texture of the latter. Mr Syme possesess a fracture of the lower third of the femur, presenting numerous bony points in the dense substance around the injury, which have no connection with the old bone; and Mr Liston very candidly showed me a fractured tibia in which he had turned off a portion of new bone with the periosteum. Mr Howship describes and figures a cartilaginous state of the periosteum, in which there was ossific deposit in a fracture of one of the lower animals, and he refers to Mr Heaviside's museum for similar examples in the human subject, which appear to be conclusive. In fractures of the bones of rabbits, I have distinctly seen the thickened and indurated periosteum the seat of ossific deposit, while the contiguous cellular texture became gradually condensed around the *callus*, so as to assume the appearance of a new periosteum investing the swelling. It appears, indeed, that the fibrous and cellular tissues are of great importance in the reparation of fractures, and that the preliminary steps in the process are mainly dependent on these structures. Cruveilhier has long since shown this by various facts which he observed in the human subject and in the lower animals, and Andral asserts that the union of fractures takes place at the expence of the fibrous and cellular textures. From an examination of numerous specimens in our collections, it is evident that the formation of new bone commences at some distance from the ends of the fracture, generally at the point where the periosteum separates from the shaft of the bone, so that the size of the external case of osseous matter seems to be determined by the extent to which the periosteum has been detached from the bone by the violence of the injury.

The firm leathery texture of the substance between the extremities of the fracture is well exhibited in Mr Syme's cabinet in a fracture about ninety days after the injury. In this preparation an oblique fracture extends through the upper third of the thigh bone; the extremities of the fracture are united by a tough and apparently ligamentous substance, in which there is no osseous deposit, but there is new bone formed externally, and in the medullary canal connecting the fragments firmly together.

Numerous examples of the completion of the work of consolidation are to be found in almost every anatomical museum. In many of these specimens the extremities of the fracture are firmly united by new bone, but sufficient time has not elapsed for the complete removal of the external callus, and re-establishment of the medullary canal, and in such instances the bone is stronger in the situation of the fracture than elsewhere; but this additional strength no longer remains when the bone returns to its natural state by the absorption of the superfluous callus.

The description of those authors who state that the new bone is formed around the external surface of the fracture prior to the final consolidation of the extremities of the fragments, Dr Knox declares to be a distinction without a difference, since he remarks that the more external part of the effused fluid will naturally ossify first in consequence of its proximity to the circulation. However bone is deposited in the very centre of the medullary canal at an early period; and if, in compliance with Dr Knox's opinion, we suppose callus to be generated exclusively by the old bone, as described by Haller, it would appear extraordinary that the fractured extremities should be the very last part in which the ossific action is established. In truth, although the opinions of this physiologist are undoubtedly entitled to attention, it appears that the general accuracy of the researches of Dupuytren, Breschet, and Howship, cannot be called in question.

Mr Hunter informs us, that the extremities of a broken bone become softened from the absorption of the earthy particles; and Gendrin makes a similar statement. Mr Howship expresses a contrary opinion; and, after an examination of numerous fractures at various periods subsequent to the injury, I have not been able to satisfy myself of the accuracy of Mr Hunter's observations.

With respect to the vascularity of *callus*, we are informed by Dr Hunter, that he had long been accustomed to show in his anatomical lectures that it is really bone, and vascular in every part. Dethleef demonstrated the vessels of callus, and Mr Howship injected this substance in rabbits at various periods from the ninth to the thirty-second day. In the Museum of the Royal College of Surgeons of Edinburgh is a fracture of the tibia and fibula, in which the new bone is shown to be very vascular; and the anatomical collection of the University contains several successful injections of callus. In this museum there is a preparation of great beauty, in which extensive exfoliation of the skull has been followed by partial reproduction of new bone, which has been very minutely injected.

In conclusion, it may be observed, that the consolidation of fractures is neither to be compared to the original growth of bone nor to the cicatrization of soft parts, since a few detached points of similarity are not sufficient to justify the comparison. No theory has yet been proposed capable of embracing all the phenomena observable in the reparation of fractures, for the process presents important differences dependent on the situation, extent, or complication of injury, as will be shown on a future occasion. In simple fractures of the shafts of the long bones, it appears that the preliminary changes in the work of reparation take place in the contiguous soft parts, particularly in the fibrous and cellular tissues, which undergo the osseous transformation before the formation of bone between the extremities of the fracture. The capsule may be remarkably thick, or, on the contrary, so thin as scarcely to be perceptible through the integuments. The new ossific matter becomes connected at a very early period with the external surface of the old bone at some distance from the extremities of the fracture, and the work gradually advances from this situation on either side till the broken extremities are encased in a firm bony clasp. In examining the numerous specimens of fractures in our museums, it is remarkable that the fragments are generally united by portions of new bone extending from the external surface of one part of the old bone to another, and not from the extremities of the fracture,—a circumstance which is especially enforced on our attention in the examination of those preparations in which the injury has been extensive. If a fractured bone were retained in exact apposition and in a state of complete immobility, union might take place simply by ossification between the extremities of the fragments,—a process, however, which would require a long time for its completion.

I purpose resuming the subject by a consideration of those fractures which, from their situation or other peculiarity, do not unite in the ordinary manner; and an account of the reparative process in compound fractures will be more conveniently given in a separate communication.

Chatham Barracks, May 2, 1835.

ART. IV.—*On the employment of Blood-letting in Scarlet Fever.* By ANDREW DEWAR, Dunfermline.

IN December 1813, I examined the body of a child which had died of scarlet fever on the sixth day of the disease, and found the following morbid appearances.

The fauces were extensively inflamed and ulcerated; the mucous membrane of the *larynx* and *trachea* was reddened, and tore under the slightest touch; the bronchial tubes were filled with a tough viscid fluid, and the bronchial membrane was much reddened. The mucous membrane of the *pharynx*, stomach, and of several parts of the small intestines, exhibited marks of inflammation in the various forms of arborescence, softening, and abrasion. The evidence of inflammation in the head was equally decisive. The vessels of the arachnoid and *pia mater* were distended with blood, and a gelatinous fluid was effused over the surface of the brain. The ventricles were filled with turbid serum, and when the hemispheres were sliced across, innumerable minute points of blood were seen to issue from the divided vessels.

The very unequivocal evidence of inflammation which this case presented, is, I believe, invariably present in all persons who die of *scarlatina*. This has been proved to my own satisfaction by the dissections which I have recently witnessed, in which the morbid appearances were essentially the same as those I have related, and is confirmed by the concurring testimony of those who have written on the pathology of this disease.

If we examine the symptoms of scarlatina, we shall find that they are of such a nature as are likely to be followed by the consequences which dissection reveals.

The attack is ushered in by a febrile paroxysm, which is accompanied with, or speedily followed by, stiffness in the neck, and difficulty in swallowing; and the throat, if inspected, is seen to be swelled and intensely red. Presently the eruption appears on the neck, and gradually extends over the body, and is seen to pervade the roof of the mouth, inside of the cheeks, and the *fauces*. The tongue is red, frequently painful, and the *papillæ* prominent and fiery; and I presume no candid person will doubt that the mucous membrane of the respiratory organs and digestive canal partake of the inflammation which is visible on the skin, and in the mouth and throat. Indeed the tenderness which is felt on pressure over the stomach, and the peculiar diarrhœa which too frequently occurs in severe cases, put beyond the possibility of cavil the inference, that inflammation exists in the intestinal tube. The head, too, is speedily affected; the eyes are red and prominent, and in the progress of the disease become morbidly sensible to light; the arteries of the scalp are now felt to pulsate with unusual force, the head aches, and the patient is drowsy, restless during sleep, and imperfectly coherent. At the same time the heart beats forcibly; and the pulse is frequent and strong, indicating that, for the time, actions of increased power are going on in the system.

The connection, then, between the symptoms of scarlet fever and the morbid appearances after death, is perfectly apparent. We have fever with a strong pulse, an inflamed mouth and throat, and unquestionable evidence of inflamed bowels, accompanied with a red skin, swelled face, blood-shot eyes, throbbing temples, aching head, stupor, and incoherence. The patient dies, and dissection exhibits to us the effects of inflammation through every variety of shade; viz. increased redness, softening, ulceration, mortification, with anasarca, ascites, and water in the head.

What are the means hitherto employed in the treatment of scarlet fever?

I shall not speak of the antiquated plan by external and internal stimulants, viz. heated apartments from dread of the cold, Cayenne gargles to cure the mortifying throat, and the stimulus of bark, wine, and brandy, to sustain the sinking strength,—a plan so directly at variance with the information which modern pathology has afforded us, that it is now undeserving of a moment's consideration.

A juster and more intelligible principle assuredly pervades the present plan of treatment, which essentially consists in careful ventilation of the apartments of the sick, light and clean clothing, spare diet, cool or cold drink, cold or tepid affusion over the surface of the body, leeches to the neck, cooling and astringent gargles, mild laxatives, and, in rare cases, a small and long-delayed general bleeding.

The dissection which I have related made, early in life, a strong impression on my mind, and led me to doubt whether the remedies usually employed were sufficient to conquer the inflammatory action, which I regarded as the cause of the morbid appearances I have described. No one, I think, who has treated this disease, will hesitate to admit that the present method of cure is very unsatisfactory, and that the relief afforded by any or all of the means is transient and imperfect. Such, at least, I found them to be; and the many mortifying failures I experienced in my own, and witnessed in the practice of others, led me many years ago, in spite of the anathemas with which it has been branded,* to adopt the only remedy which modern pathology points out to us as deserving of our confidence,—I mean general bleeding.

Could we divest ourselves of the prejudices of education and the authority of names, (great and justly reverenced as those names are,) and look upon scarlet fever with our minds free from all preconceived opinions, what do we see? The body covered from head to foot with *redness*, very similar to that which is usually called inflammation of the skin, and internally, as far as the eye can reach, we see the *redness* continued; we have, at the same time, all those symptoms which are regarded as characteristic of inflammation of the mucous membrane of the lungs and bowels when they have their origin in common causes, while here also, as in all other cases, we have the sympathy of the general system excited in a degree proportionate to the extent of the inflammation, and the importance of the organ affected; and, in fine, if the person dies, we have the same morbid changes as follow the ravages of inflammation in ordinary circumstances. In a word, we have the external and internal skin of the body inflamed, and the accompanying fever greater or less according to the degree of the inflammation.

These facts are known to every observer, and because the inflammation pursues a stated course, and possesses the inexplicable power of affecting the same individual once, and once only, are we, from some vague and mistaken fancies concerning *specific contagion, and the hazard of interfering with the eruption*,—fancies which have no foundation in nature, and to which hecatombs have been sacrificed—are we to shut our eyes to those unerring guides which pathology unfolds, and disregard those inferences which, in other circumstances, we would have drawn so readily, and applied so efficiently. Had scarlet fever appeared among us in the same circumstances as the Cholera, the light which modern pathology, unbiassed by prejudices, would have shed over the disease, would have speedily revealed a sounder and more successful principle of practice than the conflicting experience of theoretical physicians, unskilled in morbid anatomy, has for ages been able to establish.

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* "Bleeding and purging,—a fatal practice."—Dr Currie.

During the last twenty years I have witnessed four epidemics of scarlet fever, and for two years past it has prevailed, and still continues to prevail, to a great extent in this town and neighbourhood. Since the 1st of July 1833, I have attended 183 persons labouring under this disease in its acute stage, *i. e.* with the eruption *still present* upon the body, and out of that number it has been my good fortune to lose only *two.* Nor must this small degree of mortality be altogether ascribed to comparative mildness in the character of the disease. As a proof that the present epidemic has not been a slight one, I may mention, that, in this town and its vicinity, upwards of 150 persons have died of scarlatina within the last two years.

The gratifying success now mentioned, with which the cases occurring in my practice have been attended, is to be attributed to the early and efficient employment of general blood-letting. In every case in which the remedy was properly used, I have invariably found the symptoms greatly mitigated, and in many the disease wholly and suddenly subdued. To accomplish this purpose, however, a scanty or long-deferred blood-letting will not suffice. It must be practised, as in other cases of acute inflammation, so as to produce a marked impression on the circulation, while the quantity drawn must be so considerable as to make it probable that the impression will be permanent. When, therefore, I had an opportunity of seeing the case from the commencement, I preferred drawing blood when the eruption had decidedly appeared upon the breast, but had not spread over the rest of the body. I selected this time chiefly to prevent all ambiguity respecting the nature of the disease. I likewise preferred the evening for the purpose, as I generally found, that, if the bleeding succeeded in breaking the force of the fever during the evening exacerbation, the disease was more certainly subdued than if the blood was drawn during the morning remission. On all occasions I have found it necessary to bleed, whatever was the age of the patient, to complete relaxation. The bleeding when thus practised is immediately followed by diminution of the heat of the body, of the force and frequency of the pulse, and of the headach and sore throat; and the eruption entirely disappears, and in many cases scarcely again becomes visible. While the blood yet flowed many patients have expressed in strong terms the relief they enjoyed. I myself passed through the disease in November 1833, and can speak from personal experience of the soothing influence which the remedy exerts over the feelings of the sick. None can know but those who have felt it, the sudden and delicious transition which I experienced on being bled, from burning heat, general restlessness, and confused thoughts, to perfect quietude and self-possession.

Miss G., aged 13, was seized on the evening of the 30th of March 1834 with languor, pain in the back, and sore throat. During the night she was very hot, extremely restless, and the morning of the 31st in some degree incoherent. I saw her in the afternoon. Her face was flushed, her eyes red, she tossed in bed, was drowsy, and it required an effort to rouse her to consciousness. Her neck was stiff; her throat swelled, very red and painful; skin intensely hot; pulse 125, and strong; her neck, chest, and arms, were covered with the eruption of scarlatina, to the contagion of which she had been exposed. She was raised in bed, and bled to about a pound, when she became faint, and the eruption entirely disappeared. She expressed great and instant relief from the bleeding. Two hours after she sat up in bed and took tea. About nine at night a pailful of milk-warm water was poured over her body, after which she slept well. Next morning her pulse was 90, the pain of the throat greatly relieved, and her general feelings very comfortable; the eruption scarcely perceptible. A teaspoonful of Epsom salts acted gently on her bowels. At night the tepid affusion was repeated. Next day she was so well as to be occasionally out of bed. Took gruel and tea with toast for food. No other remedy was used. On the fifth day from the attack she was able to leave her apartment.

J. M., aged 30, was seized with a rigor, followed by heat, headach, and sore throat, on the night of the 26th of February 1835. On Sunday the 1st of March, when I saw him, his face was full and flushed, his eyes red, his head ached, and he felt his thoughts confused, his skin was hot, and he was red from head to foot; the eruption had appeared during the preceding night; his tongue was slimy in the centre, and red at the edges; his throat was swelled and painful. About thirty ounces of blood were immediately drawn from the arm, when he became pale and relaxed. The eruption universally disappeared. He passed a comfortable night. Next day the eruption had returned, but so faintly as scarcely to be visible, the pulse 88, soft, the skin moist, and the thirst, which had been urgent, gone. Does not now complain of his throat. Took tea to breakfast. His bowels were moved by ʒii. of Epsom salts, and his body was washed in the evening. On the 3d the fever was nearly gone. He was again washed in the evening, and confined to gruel for his food. On the 4th he was out of bed. No other remedy was used.

In the house in which this person resided, two children, one 4, and the other 2 years of age, were affected with the usual symptoms of scarlatina. They were both cases of considerable severity, and very similar to each other. The elder boy was treated with daily changes of raiment; he was twice sponged during the day, and had the tepid affusion twice during each night; he had frequent small doses of castor oil, and his food was gruel and arrow-root. The younger child was bled freely on the first appearance of the eruption, and was washed with tepid water every night at bed-time. He took one teaspoonful of castor oil. The first was confined to bed for ten days; the other was nearly free of fever on the third day after the bleeding, and was out of bed on the fourth.

On the 2d of January 1835, I was requested to visit a child, 2 years of age, who laboured under a severe sore throat. The disease had continued for ten days, and had been accompanied in the commencement with the fever and eruption of scarlatina. The eruption had been gone for several days, but the throat was swelled and ulcerated; he swallowed with great difficulty, and an offensive fluid constantly flowed from his mouth. The tongue was wholly red, and in part excoriated. He complained when pressure was made on the belly. He had suffered for several days from a very frequent purging of a fluid resembling jelly, generally nearly colourless, but occasionally tinged with blood. He was so torpid that he could not be roused. He died on the following day.

Another child in the same family had also passed through the disease, and, as his mother said, "had recovered;" only his face was a little swelled. In him the usual dropsical symptoms had commenced. His breathing was quick; his face, hands, and feet were swelled; his belly was full, and fluctuated; his tongue was red; his bowels slow, but were unnaturally purged by very small doses of medicine; his urine was scanty, and coagulated in part by the application of heat; his pulse was frequent and strong; he was drowsy, was disturbed during his sleep, and awoke alarmed. This boy ultimately recovered, but not until after being twice bled from the arm, and once from the epigastrium with leeches, and after taking cream of tartar, nitrate of potass, and digitalis for nearly a month.

During my attendance upon this boy, two of his brothers were attacked with the usual symptoms of scarlet fever. As soon as the eruption began to appear they were both bled to relaxation, and their bodies washed with tepid water at bed-time. They took each twice a small dose of an emulsion, composed of a solution of gum arabic and castor oil, with a few drops of the *Aqua Ammoniæ*. They were both out of bed on the fourth day, and in neither did one uncomfortable symptom remain.

I was for some time in the practice of setting the patient erect, and allowing the blood to flow until he became pale and faint, or vomited. This, however, I have more recently found not to be sufficient. The mere relaxation, especially if it has been produced by the loss of a small quantity of blood, seems to produce only a very temporary interruption to the progress of the disease; from this state the patient soon rallies, and the fever resumes its force.

Miss E. R. aged 10, was seized with the scarlet fever on the 10th of January 1835. As her condition was urgent, I bled her in the morning as soon as the eruption began to appear. She became faint when not more than seven or eight ounces of blood had flowed. In the evening the pulse was forcible and frequent, with great heat, and universal eruption, a flushed face, and a disposition to wander. I again bled her to twelve ounces, when she *fainted*. The violence of the symptoms immediately subsided, the eruption almost disappeared, and the disease advanced quickly to a favourable termination. The only other remedies used were, washing the body at bed-time with tepid water, and taking twice a dessert spoonful of castor-oil.

In consequence of the occurrence of several cases similar to that now related, I have of late bled all persons who had passed the period of mere infancy in the horizontal posture, and when I had obtained what I considered a proper quantity of blood, I raised them into the erect posture till relaxation took place. In this way, I think, I have avoided the necessity of repeating the bleeding.

Although the commencement of the eruption is, without doubt, the time at which blood-letting can be practised with the greatest confidence of success, yet, while the pulse continues strong, and there is reason to believe that effusion has not taken place into the head, I have not hesitated to bleed, and have never yet had reason to regret it. Indeed, on several occasions I have succeeded when I was convinced that no other remedy could have availed to save the life of the patient.

J. R. aged 20, was attacked with the ordinary symptoms of scarlet fever. On the sixth day of her confinement to bed, and the fourth of the eruption, when I first saw her, she had great heat of skin, with a universal dusky redness, oppressive headach, strong and frequent pulse, soreness of the whole body, and incessant restlessness; the tongue was of a dull red colour and raw; she was generally wakeful, her short sleeps being uncomfortable and unrefreshing; the bowels were loose, the discharges being slimy, and frequently resembling red currant jelly; and she complained of pain when pressure was made on the region of the stomach. She was bled to twenty ounces before she became faint. She took a small dose of the castor oil emulsion, and at bed-time a spoonful of chalk mixture with twenty drops of the muriate of morphia. She passed a comfortable night. The force and frequency of the pulse, and the general soreness and restlessness, were greatly diminished. The bowel complaint, and the tenderness at the epigastrium still continued. Twelve leeches were applied. The emulsion was repeated every morning for the next three days, and the absorbent and opiate at night. By this time the healthy state of the mucous membrane was so far restored, that no other means were necessary except a careful regulation of her diet. My attendance on her ceased on the eighth day.

In the autumn of 1833 I was requested to visit a young woman, aged 15, on the fifth day of her confinement to bed, and the third from the appearance of the eruption. She lay prostrate in bed, was drowsy, and could with difficulty be roused to even imperfect consciousness. After a few moments of comparative stillness, she tossed from side to side in bed, and moaned constantly. The restlessness and moaning, with scarcely any cessation, had continued during the preceding twenty-four hours. Her eyes were red, the vessels of the conjunctiva being minutely injected with blood. Her skin was intensely hot, and impressed the fingers with a very peculiar pungent sensation. The distinct eruption had disappeared, but there remained on various parts of the body, particularly the arms and legs, large patches about half the size of the hand, of a dark-red colour, resembling that of venous blood. The tongue was red, and universally excoriated. She complained when the epigastrium was pressed upon. The arterial pulsation in every part of the body was forcible and frequent. The danger was most imminent. Without delay, but not without hesitation, I drew blood from the arm. When about ten ounces had flowed she became faint. This quantity I regarded as insufficient to break the force of the disease. I therefore took the pillows from beneath her head, and put my finger on the wound till she rallied, and then withdrew other ten ounces of blood. After the bleeding she slept, and seemed more placid. In five hours the strength of the pulse and heat of the skin had returned, when she was again bled to a pound. During the night she was quiet, perfectly coherent, and slept occasionally. In the morning she was so collected as to give a distinct account of her sensations. She complained of pain, and a sense of knocking within the head; her sight was perfect, and the colour of the eye was natural, but the expression wild. The heat of the surface was still very great; but the red patches had entirely disappeared. The pulse was strong and frequent; and the tongue raw. I again bled her to about twelve ounces, and gave her, after a short interval, a small dose of Epsom salts in large dilution. From this time the fever did not return with any violence. The only other remedies were tepid washing for several nights, and small doses of sulphate of magnesia to regulate the bowels. She recovered rapidly.

Ulceration of the throat is one of the most severe and painful symptoms that accompany this disease. It is the consequence of the inflammatory action which prevails throughout the whole of the mucous membrane. Though it is probable that ulcerations are more frequent in the throat than in any other part of the mucous membrane, yet they are, without doubt, often to be found in the bronchial membrane and intestinal canal; and, I am convinced, that, if dissections were carefully performed, they would be found to prevail more generally and extensively than has hitherto been believed. No treatment can be more unsatisfactory than the leeches, the gargles, and the liniments, which are in common use for the cure of this untoward symptom. In truth, the treatment of the sore-throat proceeds upon a defective knowledge of the pathology of the disease. The depletion is directed to the throat, as if it was the only part of the system labouring under inflammatory excitement, while in reality it is only one link in the chain of general inflammation in that particular structure. If this statement require confirmation, it is obtained in the fact, that, since I have employed general bleeding in the manner described, I have not had occasion in any of the 183 cases I have mentioned, with a single exception, to apply a leech for the cure of the sore throat, although I have seen several die of ulceration in the throat, who had been treated in the usual way. In every instance the pain in the throat was relieved by the bleeding, and readily and speedily yielded to the most ordinary means, and, indeed, in a great majority of the cases, required no special treatment at all.

I have invariably bled the patient until the eruption *disappeared*, and in a considerable proportion of the cases it did not return, and even when it did return, it was much less diffused and less fiery in appearance. The scholastic and imaginary terrors, lest the eruption be interfered with, I have long disregarded. I look upon the eruption as the evidence of the inflammatory state, and the fever as symptomatic of the inflammation; and I find that the eruption and the fever for a certain period advance or subside together. It is true that the fever often continues after the eruption has ceased, but in these cases it is prolonged by organic lesions produced by the inflammatory action in some internal structure. Out of the 183 cases, 147 were bled, and in all the eruption was essentially diminished, in many finally removed; yet not in a solitary case did any unpleasant consequence follow. The recoveries were uniformly rapid.

Some speculatist will probably say, that, as the morbid matter is prevented by the bleeding from "coming out," the person will not be protected from a recurrence of the disease. Time alone can decide on the validity of this objection. I can only say in answer to it, that I have now known many persons who were thus treated, exposed, again and again, to the contagion, without being affected by it.

It is gratifying to add, that I have not had even the approximation to a dropsical symptom. I have seen during the last two years fifteen cases of dropsy after *scarlatina;* but they all occurred in persons who had either received no medical treatment, or in whom the treatment had been conducted on different principles from that which I have been recommending. In none of these 183 cases has there been the slightest tendency to dropsical effusion.

The two cases which I saw *during the eruption*, and in the treatment of which I proved unsuccessful, were instances of congestive fever. The onset of the fever was severe, and the reaction imperfect. The eruption appeared, but was pale, and fluctuated; and the face, hands, and feet, continued cold throughout the disease. The one died on the fourth day, the other passed on to deep typhus, and ultimately sunk apparently from exhaustion.

The discredit into which blood-letting has fallen in the treatment of scarlet fever, has probably arisen from the want of due attention to the circumstances in which it has been prescribed. It is a remedy of great efficacy for good or for evil. If used at random, and without a careful discrimination of the circumstances of every individual case, it will, assuredly, justify the reprobation which Dr Currie has thrown upon it; and may prove "a fatal practice." If used early, and in insufficient quantity, it will only diminish the strength of the patient, without lessening the force of the fever; and if delayed too long, it will accelerate the effusion into the head, to which the disease is fast hastening. If, on the other hand, it is practised at the proper time, and in sufficient quantity, it will prove a means of cure, safe and successful, far beyond any other with which I am acquainted.

It will be objected, I dare say, that depletion, more especially ample depletion, will be unsuitable to some epidemics. There are certain conditions of the atmosphere, or rather certain unknown causes, under the influence of which, scarlet fever (and indeed any other fever) may assume an unusually malignant character. By this I understand that these causes, whatever they are, so modify the contagion, or the health of the individual, that the early stage of the disease is of unusually short duration, and the worst, or typhoid stage, is speedily developed. This I am willing to admit; but I believe it to be equally true, that the essential character of scarlet fever, I mean the inflammatory state, is still present, and can be most successfully combated by its only appropriate treatment,—blood-letting: although certainly, greater promptitude and discretion are necessary in its application. The typhoid state is not the disease, but its consequence, and can only be prevented by removing the previous excitement. The free but cautious and seasonable depletion, which has robbed typhus itself of many of its terrors would, I doubt not, be more successfully directed to the cure of malignant *scarlatina*, than all our other remedies put together.

The cases which I have related have not been selected for the purpose of exhibiting bleeding in its most favourable light in the treatment of *scarlatina*. In not a few of the cases which came under my observation, bleeding almost instantly extinguished the disease, both the fever and the eruption disappearing, and the patient being able to be out of bed in twenty-four hours.

On the 20th of January 1835, a boy, 5 years of age, was confined to bed with a hot skin, sore throat, great thirst, strong pulse, restlessness. He was covered with the eruption of scarlet fever. He was bled to faintness. In the evening I found him running about the room. He was washed at bed time, and took a small dose of castor oil. No other remedy was used. Next day he was in the parlour.

I do not assert, nevertheless, that exceptions may not occur to the invariably successful employment of blood-letting. But with this admission, I must repeat, that the cases which I have detailed present, so far as I am capable of judging, a fair average result of the effect of the remedy when practised in the manner which I have recommended.

Dunfermline, 30th March 1835.

Art. V.—*Case of Renal Calculi.* By John Marshall, M. D., Manchester. (Read before the Manchester Medical Society, January 1835.)

In glancing over the whole catalogue of diseases to which the human race is liable, and to the cure or relief of which our profession devotes itself, there is not to be found one which possesses a deeper or more melancholy interest than that of which the following case is a deplorable instance. Confessedly incurable,—at least by any means hitherto tried or suggested,—this intractable malady at the same time subjects its miserable victim to agonies which exceed any human suffering I have ever witnessed; and which it baffles the utmost efforts of our art even to alleviate. Where we cannot relieve, it becomes the more deeply incumbent on us not to increase suffering, by the exhibition of injudicious remedies, which I consider to have been done towards the close of the following case; and it is this circumstance, added to that of its being, so far as I know, nearly unique, that has induced me to prepare it for the consideration of this Society.

Mr John D., the subject of the following case, first came under my notice and professional care in 1817, in consequence of my forming a connection with the venerable and talented gentleman who had attended him from the commencement of his complaints. Mr D. was then about sixty years of age, was above six feet in height, of a well-made and highly muscular frame; possessing that peculiar step and air which denotes the capability of enduring great bodily fatigue. Even then his complexion was florid, and his eye bright, and altogether no one would have pronounced him more than fifty years of age. His temper was extremely cheerful and convivial. From his earliest youth he had been greatly attached to the sports of the field, which he continued to enjoy up to the commencement of his nephritic complaints; yet for many years before I knew him, he had been most strictly temperate in every respect. His temperament was decidedly sanguine, with keen feelings, and great excitability.

In May 1813, being then in London, he had for the first time an attack of gravel, during which he was attended by Mr Humby. A small stone was passed, and in about a week he was sufficiently recovered to go to the country; where, after riding on horseback a whole forenoon, he for the first time observed his urine to be much discoloured,—a symptom which continued with little interruption till 1816. In July of this year he first observed that pure blood was passed along with the urine.

In May 1814, he experienced a smart attack of *nephritis*, attended with the usual symptoms; and during its progress he passed some small *calculi* of a brownish hue, and also considerable quantities of red sand.

In June 1815, he had a similar attack, but attended with such severe inflammatory symptoms as to require very copious depletion. During the following summer and autumn, he had repeatedly similar, but less severe, attacks, and passed several small calculi, with bloody and discoloured urine, and considerable quantities of red sand. In September of that year, he was subjected to an alterative course of mercury, which was continued for seven weeks, and so far produced good effects, that for twelve months afterwards he remained free from any violent attack; and those that did occur were greatly divested of the severe inflammatory symptoms. He still continued to suffer much from pain across the loins, and to pass *coarse* sand and bloody urine; neither of which, it may be remarked here, ever gave him the least pain or uneasiness in passing from the bladder. In July 1816, the urine suddenly became clear and limpid, and continued free from any discoloration or mixture of blood to the termination of his life.

In August 1817, I for the first time attended him under a severe attack of *nephritis*, which was subdued by copious bleeding, and the use of the hot bath, which we urged the more freely, as, while immersed in it, considerable quantities of sand and small calculi were passed, which almost invariably gave relief. The fortitude with which he bore his excruciating sufferings was truly admirable; and no sooner was a little relief obtained, than the cheerful glance of his eye informed those around him that it was so. In January, May, and September 1818, and in January and May 1819, he had similar attacks, which were always subdued by the foregoing mode of treatment.

At this period, 1819, the situation of our patient was sufficiently deplorable. From the very commencement of his nephritic complaints, the functions of the stomach had become greatly disordered; and, even when free from actual suffering in the region of the kidneys, gastric irritation was almost constantly present; though up to that period he had, to use his own expression, " never known whether he had a stomach or not, save when it called for food." Articles of diet which formerly were agreeable, now became absolutely the reverse, exciting nausea, heartburn, flatulence, and even vomiting; the number of these gradually increased as the disease advanced, till his diet was reduced literally to that of an anchorite. Dry toast, with milk and water, or weak tea, for breakfast; plain roast or boiled meat, with dry bread, at dinner; and one glass of Madeira, with water, were the utmost stretch of his indulgences; yet even this abstemiousness availed not to procure him more than comparative ease from this cruel aggravation of his other sufferings. One article of which he had, when in health, been fond, and always found agree well with his stomach, was butter; but for some time previous to the first developement of his nephritic complaint, the effects of butter, when used in any form, almost resembled those of poison, viz. nausea, retching, and pain of stomach, from which no remission was obtained until the contents of the stomach were ejected; when the acidity was uniformly so great, as to set the teeth on edge.

From the commencement of his complaints, he had occasionally consulted the late Dr Cleghorn, Professor of Chemistry in the University of Glasgow, who entirely coincided in our views of his case. This year, 1819, his case was transmitted for consultation to Mr Humby of London, and through that gentleman to Mr Brande, and Dr Latham, then President of the College of Physicians. The replies of these three gentlemen are now before me, and nothing more meager can possibly be conceived,—the whole three, in fact, forming but one humiliating proof that even the most profound knowledge and splendid talent in our art can in this most intractable malady say nothing,—do nothing,—hardly even palliate its miseries.

Mr Brande recommends attention to be paid to gradually diminishing animal food, and the use of magnesia with mild acid drinks in preference to the supercarbonates of soda and potassa, which the patient had hitherto used alternately with magnesia. Dr Latham's only prescription is water, as a beverage, to the utter exclusion of all malt or fermented liquors; and Mr Humby's only advice is, that the water recommended by Dr Latham be distilled. I may mention here, that for five years previous to this consultation, Mr D. had used no malt or fermented liquors, except the solitary glass of Madeira already mentioned. Some time previous to my first attendance on him, he had also consulted the late Dr Baillie of London, and the late Dr Gregory of Edinburgh; but neither of these eminent men did more than recommend perseverance in the plan of treatment already adopted by his ordinary medical attendants.

Our usual mode of treating his more severe nephritic attacks was by bleeding to the amount of twenty or thirty ounces, twice or thrice in twenty-four hours, according to the urgency of inflammatory symptoms. The hot bath was, as I have already mentioned, very freely used, in consequence of the great relief generally obtained while in it, particularly after copious depletion. Great and constant attention was paid to the state of the bowels, but brisk purgatives we never dared to administer, owing to the increased anguish excited by them in the region of the kidneys and along the course of the ureters. Generally speaking, the severe paroxysms were ushered in by the usual symptoms of *pyrexia*; but I have known the agonizing pain across the loins and along the course of the ureters come on without any previous warning whatever; and this occasionally immediately abated on a copious discharge of red sand taking place on the urine being voided. At other times these attacks were preceded by extreme languor and sense of weariness over the whole body, by heats and chills alternating, and almost invariably by greatly increased gastric irritation, causing loathing at food, *nausea*, and retching. The pulse usually rose to 110 and 120 in a minute. The skin was hot, and had a most peculiar husky feel. No sooner did a large discharge of red sand take place than these painful symptoms gradually, nay sometimes suddenly disappeared, and our patient regained his usual strength and vigour with astonishing rapidity. No sooner, however, had his constitution reached a certain pitch of health, than the hidden foe was once more roused into activity, and once more the same weary round of bitter agony and reducing remedies was to be again undergone. It was truly astonishing, considering his age, how long his vigorous constitution maintained unbroken this double warfare, but at length it began to give way; his flesh shrunk, his step became feeble, and his florid complexion was exchanged for a sallow, sometimes an almost *orange* hue. Nevertheless, as will be seen in the sequel, the innate energy of mind and body were far from subdued.

In 1819–20, the manufacturing districts in the west of Scotland were disturbed by a spirit of insubordination which threatened the general peace of the country. Mr D., keenly attached to the then existing government, many influential members of which were his personal friends, took a very warm interest and active part in these troubled scenes. At his suggestion, and chiefly through his personal influence, a volunteer corps was raised in Port-Glasgow; and during the winter of 1819 and 1820, he underwent much fatigue and unusual exposure, and lived in a state of constant excitement as to the drilling and embodying of this corps, and also as to the internal politics of the country around him. It is not the least remarkable feature of his case, that during the whole period his mind was in this excited state, he had no decided nephritic attack. In the beginning of April 1820, his volunteer corps was summoned to Paisley to assist in suppressing riots. He remained there with them for ten or twelve days, undergoing constant fatigue of body and anxiety of mind; and from meeting with many old friends, assembled there by the peril of the times, he was more exposed to convivial parties than for years before. After his return home, events occurred in the neighbourhood which tended to keep up, and even increase this unnatural state of excitement. Observing with great alarm the exertions he continued to make, I expressed my apprehension that he would suffer from them. To which he replied; "Nay, Doctor, I assure you I am the better for it. I think this military career of mine has made a new man of me; and, seriously, I think I have somehow got altogether rid of the nephritic tendency." This was a vain and delusive hope. Exactly in proportion as the excitement of mind subsided did those uneasy sensations return. About the beginning of June a very marked change to the worse was observable upon his personal appearance: his colour became extremely sallow, and an air of increasing debility was evident. Yet it was not till the 20th of that month that any decided attack took place. He was then seized with loathing of food, sickness at stomach, vomiting, and smart rigors. At this time the pulse was natural, the tongue clean, the bowels regular, urine depositing small quantities of red sand, skin remarkably sallow and husky. We endeavoured to subdue the irritation of the stomach by the application of a small sinapism to the region of it, by mild laxatives, saline effervescing draughts, and other palliative measures, well knowing that the exciting cause it was far beyond the reach of our art to remove.

In the beginning of July, a physician was called from Glasgow to our assistance. This gentleman supposed that all gastric irritation proceeded from diseased and enlarged liver pressing upon the nerves of the stomach; and that, therefore, mercury, and nothing but mercury, could effect a cure in such cases. It was of no avail that we represented that there was in the present case every symptom denoting the presence of a foreign body in the kidneys; and *none*, except functional disorder of the stomach and sallowness of skin, to denote any hepatic disease. He insisted on trying a course of mercury; and our patient, grasping at any thing that promised even the shadow of relief, consented. Accordingly, on the 6th of July, a gentle course of blue pill was commenced. Debility and emaciation, as also the constitutional irritability, rapidly increased. On the 30th of that month, he had a regular paroxysm of gout,—the first he ever experienced in his life. It fixed in the feet, and lasted about three weeks; but even during this period the mercury was, by the strenuous advice of its first prescriber, continued without interruption; and, with a view to the production of its constitutional effects, the blue pill was changed for the blue ointment. The gums became affected; and the debility increased with such alarming rapidity that, on the 18th of August, we thought it our duty to suggest the discontinuance of this mode of treatment, and to recommend the employment of additional advice to decide the point at issue. The late Dr Hill of Greenock, and the late Dr Gregory of Edinburgh, were both summoned, and both agreed with us in utterly condemning the use of mercury in such a stage of a disease, which they decidedly considered one of renal *calculus*, and not of diseased liver. By their advice the former palliative system was resumed; but the long harassed constitution was now prostrated beyond all power of reaction.

No sooner had the gouty symptoms disappeared than violent *nephritis* supervened, producing most excruciating suffering. The pulse rose and became variable, sometimes intermitting. The bowels suddenly became so torpid as to require frequent enemata to procure the smallest evacuation. The bladder, for the first time, now sympathized with the diseased state of the kidneys; occasioning sometimes retention, and at other times total suppression, of urine. On using the catheter, the bladder was frequently found empty, notwithstanding the very acute sensations of the patient to the contrary. The introduction of the catheter met with two obstacles, both of which caused great agony to the patient. The one was such violent spasms in the urethra and neck of the bladder as frequently twisted the instrument out of the fingers of the operator. When gum elastic catheters were used, they came away so twisted and crushed as to unfit them for use a second time; and, on one occasion, when using a silver one, the ring or eye at the end of it was on one side completely twisted round, as if by a pair of pincers. The other obstacle to which I have alluded, was the most extraordinary erection of the penis, which would continue for days at a time, during which the most intense agony was experienced from the sensation of the bladder being full,—even to bursting. Yet when we succeeded in introducing an elastic catheter it was frequently found totally empty; and at other times a small quantity only of urine was drawn off, which latterly contained purulent matter, and was very fœtid.

Convulsive twitchings of the muscles of the extremities and delirium were present during the last eight days of life; and during that period the irritation of stomach increased to such a degree that it would not retain the smallest particle, whether of solid or liquid.

In this dreadful state he languished till about midnight of the 3d of September when, after a violent convulsion, he expired in my arms.

About thirty-six hours after death, the body was examined in presence of four medical gentlemen besides myself. The whole *viscera* of the thorax were found perfectly sound and healthy. So were also the stomach and liver, to both of which our attention was very particularly directed. The same may be said of the whole abdominal *viscera*; no part of which, with the exception of the kidneys and the ureters, bore the slightest mark, which we could discover, of disease either acute or chronic. The bladder was perfectly sound, contained a small portion of urine, but no concretion.

On first obtaining sight of the kidneys, which were imbedded in a great quantity of adipose substance, we were struck with their unusual size, being nearly double that which is common. On using the scalpel, to lay open the left one, by a longitudinal incision, it grated upon a hard substance, extending apparently along its whole length. A more minute examination proved this to consist of four *calculi* now represented in the engraving, which lay in the manner shown by the accompanying drawing. One occupied the pelvis of the kidney passing down into the ureter, so as to act as a plug or stopper, to which its form bears no slight resemblance. Besides these, numerous small concretions occupied cells communicating with the *infundibula.*—(Plate III. Fig. I.)

Here we supposed we had found more than enough to account for the prolonged and excruciating sufferings of our patient; but on examining the right kidney, we found in it one large *calculus*, now exhibited, occupying the whole of the pelvis and a considerable portion of the kidney itself. When first removed from the kidney, its volume, as well as that of all the others, was much greater than at present. It presented on the upper part a perfect resemblance to a cauliflower, and weighed 849 grains, or fourteen drachms and nine grains. Attached to it were numerous slender branches projecting into the *infundibula*, many of which broke off in removing the calculus from the kidneys, and others dropped off as it dried.

The internal structure of both kidneys was converted into cells; these in the left were chiefly occupied by the smaller calculi now exhibited; but in the right they were empty, except here and there a small quantity of pus was found. It struck us that these cells had, like those in the left, been each occupied by a small *calculus*, at first; formed at the upper portion of the kidney, and gradually descending by its own weight, formed the aggregate in the pelvis. And the presumption is, that we may account for the bloody and discoloured urine in the earlier stages of the case, from the laceration of parts consequent on gradual descent, until it found a permanent resting-place in the pelvis of the kidney.

As this paper has extended to a much greater length than I originally expected, I shall not occupy the time by making any remarks, further than by calling attention to the great discrepancy of symptoms produced by a foreign body in the substance of the kidney. Marcet mentions the case of a man who died under his care in Guy's Hospital of hydrothorax, and on examination of the body after death, three *calculi* were found in the substance of the kidney, and the pelvis was filled with a number of *calculi* closely pressed upon each other; yet this man never had complained of his urinary organs. I may further add, that, on one occasion, when I was performing a surgical operation for Mr Smellie, surgeon, near Paisley, which from its nature led us to converse on this malady, that gentleman showed me a *calculus*, nearly two ounces in weight, which he had taken from the kidney of a man who never during his lifetime complained of his urinary organs. Although this concretion could be felt through the parietes of the abdomen, yet his medical attendant considered it a case of enlarged and indurated mesenteric glands; never conceiving the kidney could be dragged so far forward. This calculus very much resembled a piece of coral, having projecting branches attached to it. How are we to account for the absence of all suffering in this case, and in those related by Marcet?

It may be proper to mention that the opinion of my partner was, that the *diathesis* of *nephritis*, gout, and rheumatism were so analogous that it depends upon the exciting causes alone, in which of these three forms that *diathesis* shall develope itself.

Soon after the above case was read before the Medical Society here, I put it into the hands of Mr Thomas Buxton, surgeon at Buxton; a gentleman who, from his local situation, has had a more extended experience in this order of diseases than falls to the lot of most of our profession. In returning the case to me he states his opinion in the following terms.

" I now return the case you were so kind as leave for my perusal. It is both interesting and extraordinary; and I am only surprised you have not sooner given it publicity.

" I entertain no doubt that, were morbid examinations more frequent in private practice, very many unsuspected cases of *renal calculi* would be discovered. I have myself known individuals of both sexes who have unexpectedly evacuated calculi, and of sizes that would appear too large to pass through the urethra without occasioning the most exquisite agony.

" Had your unfortunate patient been *so fortunate* as to have had an attack of regular gout at a moderately early period of life (say from 45 to 50) he never would, in my opinion, have had any nephritic disorder whatever. There always is in gouty habits superabundance of uric or lithic acid; and if gout does not occur in a regular fit, some other viscus or organ is sure to suffer. I am of opinion that, in certain constitutions, an attack of gout ought to be hailed as a fortunate event, by which the party seized probably escapes a much more serious disease, as *gastritis*, asthma, apoplexy, *paralysis*, or, as in your friend's case, (when the gouty translation fell upon the kidneys), *nephritis*: for that the primary disease here was gout, I think may be very fairly inferred from the great regularity in the return of his very severe paroxysms."

ART. VI.—*Remarks on the Structure and Functions of the Primary Vessels of the Systemic, Pulmonary, and Fœtal Systems of Circulation, with the view of showing the inaccuracy of their present Nomenclature.* By JOHN THURNAM, M. R. C. S. London.

HARVEY, in his work *De Motu Cordis et Sanguinis in Animalibus*, distinguished the circulation of the blood into two distinct systems;—that through the body at large, which succeeding writers have called the greater or systemic, and that through the lungs, which they have named the lesser or pulmonary circulation.* This distinction, though highly useful, must, I conceive, give place, in philosophical accuracy, to that of Bichat into the systems of the black-blooded or venous, and the red-blooded or arterial circulation. As this distinction places the heart at the centre of both systems, and the capillaries both of the lungs and the system at large at the extremities; and as it is in these that those important changes take place, in the one instance deteriorating, and in the other reanimating this life-giving fluid, the utility and propriety of the distinction appears obvious. We find much important information on this subject, both as regards its physiological and pathological bearings, in his *Anatomie Générale*, and in his *Recherches Physiologiques sur la Vie et la Mort*; and in the latter work there is a passage which gives his reason for adopting the rather circumlocutory mode of expression involved in the terms *red-blooded* and *black-blooded*, in preference to the simpler ones *venous* and *arterial*. I extract it from Gold's translation of that work.

"In naming these two portions of the heart, I shall not make use of the terms right and left to distinguish them, but of those of the red-blooded and the black-blooded heart; for each of these two portions of itself is an isolated organ, distinct from that to which it is applied, and in the adult especially so. In fact there are two hearts, the one arterial, the other venous, notwithstanding which, we can hardly employ these adjectives for the purpose of designing them, since they both alike possess arterial and venous appendages."—Pp. 150, 151.

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* These terms, though usually ascribed to Harvey, are not to be met with either in his works *De Motu Cordis*, &c. or in the two Exercitations which he wrote in answer to the objections of Riolan, the only one of his numerous opponents whom he condescended to answer.

Here the question suggests itself, What is an artery, and what is a vein? For, did the right and left heart really possess both arterial and venous appendages, the anatomy would then be a standing refutation of this author's distinction. An artery may be defined to be a blood-vessel giving progress to nutritious, florid, living blood, whilst a vein is a blood-vessel whose contents are innutritious, black, and effete. All the vessels engaged in carrying on the greater circulation are named, in accordance with this definition, from the nature of their contents; but in the lesser or pulmonary circulation, as well as in that existing in the fœtal state, we have a great departure from this simple principle. For in both these instances, vessels which, according to this definition, are veins, are named arteries, whilst the arteries are styled veins. This certainly ill accords with that scientific precision which should obtain in this as in every branch of philosophy. It approaches to the ridiculous to have blood-vessels which are styled veins, and venous parts having arterial contents, as in the so-styled pulmonary and umbilical veins, the *ductus venosus* and *sinus venosus* of the left ventricle, whilst the corresponding set of parts with venous contents receive the names of pulmonary and umbilical arteries, and *ductus arteriosus.*

But if we admit, as I conceive we must, the definitions of these vessels which I have given, which may be resolved into the simple proposition,—that a blood-vessel is either an artery or a vein, as its contents are arterial or venous,—it will follow as a corollary, that the vessels which I have specified are incorrectly named;—that the names of pulmonary arteries, umbilical artery, *ductus arteriosus* and *sinus arteriosus*, really belong to structures now known under the names of pulmonary veins, umbilical vein, *ductus venosus* and *sinus venosus* * of the *left* auricle, whilst the names of pulmonary vein, umbilical vein, and *ductus venosus*, should be applied to the so-styled arteries and *ductus arteriosus.*

I will now inquire, What have been the causes which have so long operated in preventing this necessary change of nomenclature? And here the authority of Harvey presents itself. Had I known, when this subject first attracted my attention, that the generally received idea respecting the distinction of these vessels was one which had received the express sanction of this second Hippocrates, and that the present nomenclature of the pulmonary vessels at least was of his introduction, I should perhaps have not been sufficiently uninfluenced by the trammels of authority, so readily to have examined the subject. My present opinions, however, having been formed before meeting with that immortal work of Harvey, *De Motu Cordis*, which Haller has styled *Aureum Opusculum*; and as since that, the conclusions I had come to, have been strengthened, I feel myself sufficiently confirmed in them to present them for the consideration of those engaged in anatomical and physiological pursuits.

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* This by some anatomists, (after Dr Barclay,) who appear to have felt the inapplicability of the old name, has been named *sinus pulmonum*, or *pulmonicum*; but, for the sake of uniformity with the right side of the heart, which has *sinus venosus*, and *ostium venosum*, I would urge the adoption of *sinus arteriosus*, especially as there is *ostium arteriosum.*

It appears, that, previous to Harvey's day, the pulmonary artery and vein, as they are now called, had been known under the contradictory names of *vena arterialis*, and *arteria venalis*. Here the function and structure were both taken into account; but in ascribing the higher value to the character derived from the function, and in taking the primary and substantive appellation from it, the ancients wandered less from correct principles than their immediate successors and even ourselves have done.

Harvey, however, in his laudable desire to simplify, swerved from uniformity, when, having adopted function—an absolute and essential character—to determine the nature of the vessels in the greater, he selected, for the same purpose in the lesser circulation, structure, which is perfectly accidental in relation to their contents, as I shall endeavour to prove. But in so doing he is hardly consistent with himself, as the following quotations will show. Speaking of arteries and veins in general, and of the *aorta* and *vena cava* in particular, and after having stated the difference between them *not* to depend, as was commonly thought, on the relative thickness of their coats, he defines their difference thus:—" Arteria vas est deferens sanguinem è corde in habitum corporis; illa (vena) sanguinem ab habitu rursus in cor; hæc via a corde, ad cor usque illa; illa continet, sanguinem crudiorem, effœtum, nutritioni jam redditum inidoneum; hæc coctum, perfectum, alimentativum." *

Now, it will be evident that there is some inaccuracy in his language when speaking of the pulmonary vein (artery,) when he says, " Vas illud quod vena arteriosa nominatur, sed revera, et constitutione, et officio et in *omnibus* arteria est. † This cannot be correct, whilst it disagrees in the most important of its characters, since its contents are venous. All vessels conducting blood *from* the heart he considers to be arteries, whilst all those conducting it to the heart are with him veins; and as these have a common character as regards structure, he elevates this into the primary characteristic. This I have before stated to be an *accidental* character, and consequently it cannot be of primary importance. It remains for me to demonstrate this, and to apply it to the individual vessels.

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* De Motu Cordis et Sanguinis in Animalibus. Frankfort, 1628, p. 42.

† Ibid. p. 30.

The aorta and its larger branches have their external elastic cellular coat highly developed, in consequence of their having in their *diastole* to sustain the momentum occasioned by the heart's *systole;* but as they diminish in size, and as this momentum proportionably decreases, this coat also diminishes in developement; and in the same *ratio* that it does so, the muscular or fibrous, which is at its minimum of developement in the aorta, becomes more strongly marked, in order to make up by local action for the diminished power which the heart is capable of exerting in consequence of its distance. Now, in the capillaries, the momentum of the heart's action is quite exhausted, and the circulation in the veins being effected by entirely different agents, giving rise to no such momentum, there is no need for this extreme developement of the external elastic coat; and this no doubt is the reason of the comparatively inelastic and flaccid structure of these vessels, and of their consequent collapsed state when empty. But in the lesser circulation, this relation of the vessels to the heart is exactly reversed; here we have that vessel which I am arguing to be the true pulmonary vein standing in the same relation to the right ventricle which the aorta does to the left, whilst the four vessels for which I equally claim the title of pulmonary arteries have a corresponding analogy to the *venæ cavæ.* In this case the momentum of the heart's systole is expended not on the arteries but on the vein, hence the latter takes the character of the artery in the greater circulation, and *vice versa.* The external elastic coat of the pulmonary vein, (artery,) is not indeed so highly developed as that of the aorta; but the degree of its developement appears to be very much in proportion to that of the muscular structure of the right ventricle. *

Again, in the fœtal state, those two vessels usually called the umbilical arteries, but which have an obvious and indeed acknowledged venous function, are derived from the internal iliac arteries,—two very considerable vessels, and in which, of course, the momentum produced by the systole of the heart cannot be expended. Hence they require to possess the elastic structure of the arteries, whilst the true artery of the chord has the flaccid character of the *venæ cavæ* in the system of vessels of the greater circulation; standing precisely in the same relation to the heart as the vessels which I have endeavoured to prove to be the pulmonary *arteries*. It is no objection to this explanation to say, that the vessels which are called umbilical arteries are derived immediately from arteries, and therefore that they must possess the same characters, and should retain the name, for we must recollect that in the embryo state, arterial blood does not circulate unmixed through the arteries given off from the *descending aorta*. The vessels of these parts, except in prospective, are scarcely arteries according to our definition. They are arteries so far only as they are a channel for arterial blood, which being in these vessels freely adulterated with venous, is not able to produce so speedy a developement of the inferior extremities as obtains in the case of the head and superior parts, which receive an almost purely arterial blood.* They are veins, inasmuch as they are the medium for the exit of this comparative effete blood from the fœtal body, and their venous function is in proportion to the degree of its impurity. As the internal iliac vessels are only true arteries in the separate and independent state, these umbilical vessels which arise from them, having no reference to the arterial functions of nutrition or secretion, cannot have any claim to be considered as arteries.

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* De Motu Cordis et Sanguinis in Animalibus. Frankfort, 1628, Cap 17.

A very simple principle would thus appear to be adhered to by nature in the structure of the vessels. It is this. The high developement of the elastic cellular coat of a vessel is determined, not by its being an artery or a vein, as is generally supposed, but by the relation in which it stands to the heart. All vessels taking their course to the heart from the capillaries, either of the body, the lungs, or placenta, (which vessels are both arteries and veins,) have the external elastic coat in a minimum state of developement, and present no pulsation; whilst all vessels taking their course from the heart, whether to the capillaries of the body, the lungs, or placenta, (and which vessels are both arteries and veins,) have this same tissue in a higher state of developement, and present pulsations synchronous with the heart's systole. This law obtains in consequence of the relation which the contents of the vessels bear to the systole of the heart. Thus, although the structure of the blood-vessels is, as I have endeavoured to show, accidental, it will be seen that it must only be so regarded, when we look at them, in relation to their contents, as arteries and veins; every blood-vessel in the body, be it artery or vein, having a determined structure, peculiar and essential to itself, not dependent upon or governed by the nature of its contents, but on and by the relation in which each stands to the grand centre of the circulation, as above pointed out.

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* It will here be observed, that I adopt the explanation of the fœtal circulation given by Sabatier, (see his Treatise on that subject,) in which he supposes the existence of two currents in the right auricle, viz. 1*st*, that of the blood of the inferior cava, which is directed through the *foramen ovale* by the Eustachian valve; and, 2*dly*, that of the superior cava, which passes directly into the right ventricle. Unless this be admitted, it seems difficult to explain the use of the Eustachian valve. It is, however, a disputed point, and does not at all affect my argument as to the subject in hand.—*Vide* Magendie's Physiology, by Milligan, 1820, p. 507.

When anatomists and physiologists shall agree to this reasonable alteration of the nomenclature of the vascular system, then may we adopt what Bichat appeared to wish, but which the considerations he mentions deterred him from adopting,—the terms arterial and venous heart, arterial and venous circulation, in lieu of the inharmonious ones, *red-blooded* and *black-blooded*. When we find this eminent physiologist saying, that "the right and left hearts have both arterial and venous appendages," we must regard it as a verbal inaccuracy,—he can only mean that they have appendages improperly so named. Did he admit the fact, it would be tantamount to admitting the inaccuracy of his own distinction.

It may be urged in opposition, that my present labour has been misplaced, inasmuch as it matters but little whether a blood-vessel be styled an artery or a vein, if we fully understand its functions, and that I have not even attempted to call in question, but have supported the usually received opinion. Now this I admit; but I must be allowed to remark, that if by this feeble endeavour I shall lead physiologists to examine their long-received opinions on the structure of the different vessels in the three circulating systems,—systemic, pulmonary, and fœtal, and should thus lead eventually to more just views on this head alone, I shall consider myself amply rewarded for having struck into a path, of which, so far as I am aware, I am the first explorer.

ART. VII.—*On Lithotrity, with a Description of the Instrument used.* By WILLIAM FERGUSSON, F. R. C. S. E, Lecturer on Surgery, &c. &c.

THE operation of breaking a stone in the urinary bladder has of late years attracted much attention in different parts of Europe; and though considerable encouragement has been given to the cultivators of the art of lithotrity in Great Britain, it must be allowed that we have been far behind our continental professional neighbours, either in originality or execution. The works of Le Roy,[*] Civiale,[†] and of Heurteloup;[‡] and the known reputation of Mr Costello, as well as the total deficiency of either reputation or authorship on the part of British surgeons, regarding lithotrity, sufficiently attest the truth of this statement. From time to time within the last few years, cases of this operation have been published in the periodicals of medical literature in this country; yet, though these are proofs that the profession did not altogether neglect this method of treating stone in the urinary bladder, it appears that we have in a manner been forced into a full recognition of the operation, by the apparent success which has attended the efforts of Costello and Heurteloup since they commenced their operations on the British public.

To avoid the dangers of lithotomy is an object of great importance, and whatever new and reasonable method of freeing patients of stone in the bladder may be brought before the public, ought on all occasions to demand the deep attention of surgeons. Whether lithotrity will long continue to hold that rank amongst the modern improvements in surgery that has been assumed for it, seems as yet problematical. Further proofs of the superiority of the operation over lithotomy must yet be adduced; and the opinions of those individuals who practise the operation, or of the expert lithotomist, cannot in the present state of the question be considered, on either side, as conclusive authority. It is not to the benefits derived from the lithotritic process in particular cases of stone that we must look to for the proofs of the superiority of this operation over lithotomy; the success attending a vast number of cases (and these not selected) must be fairly stated, ere such a decision can be given with justice.

The successive improvements that have been made on the apparatus for lithotrity within the last twenty-five years, seem to warrant the idea that it will yet become more perfect, and when this is the case the operation *may* supersede lithotomy. At present, though willing to admit the superiority of lithotrity over lithotomy in those cases where the stone is small, and other circumstances favourable, I am inclined to think that the latter operation is most generally applicable.

During the spring of 1829, I procured a set of lithotrity instruments from Paris, similar to those used by Civiale, and since then have given lectures upon them each year to my pupils. I have at the same time taken notice of every change of apparatus which I considered an improvement; and until within the last twelve months, I deemed the instrument used by Baron Heurteloup named the *percuteur*, as the most efficient in use for breaking stone in the urinary bladder. It always appeared to me, however, on seeing this instrument used, that, notwithstanding its evident simplicity, compared with the apparatus of Civiale, there were disadvantages attending its action, which would always make the operation appear difficult and formidable.

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[*] *Exposé des divers Procédés employés jusqu'a ce jour pour guérir de la Pierre sans avoir recours à l'opération de la taille*, par. J. Leroy (d'Etiolle), Docteur en Médecine. A Paris, 1825.

[†] *De la Lithotritie ou Broiement de la Pierre dans la Vessie.* Par le Docteur Civiale. A Paris, 1827.

[‡] Principles of Lithotrity, &c By Baron Heurteloup. London, 1831.

On the 15th of February 1834, I published in the Lancet, a short account of a modification of Heurteloup's *percuteur*, which I fancied would simplify the operation of lithotrity; and since that period my opinion has been more fully confirmed, not only by the favourable decision of many professional individuals, but also by the opportunities which I have myself had of ascertaining the efficiency of the instrument. Indeed, so far as facility of application, with rapidity and force of execution, are concerned, I look upon it as the simplest and most efficient of any in use at the present time, with which I am acquainted. Heurteloup's percussion force cannot be applied without the vice, and the accompanying apparatus of bed and screws. Ségalas' instrument, which I consider as more perfect than the *percuteur*, is certainly not more powerful than mine, nor yet so easy of application, and that of L'Estrange, I believe, is exactly the one invented by Weiss ten years ago, with the addition of a stilet between the blades for the purpose of throwing out the fragments, so as to allow the blades to be shut, when the instrument is about to be withdrawn from the bladder,—the crushing force in both of these instruments is applied by means of a screw, which is assisted in Ségalas' by gentle strokes with a hammer. I do not dispute that with any of these a stone may be crushed; for this has been proved repeatedly; but I claim for my instrument the superiority which I think its simplicity of construction and application, as well as the rapidity and power of execution, entitle it to. I subjoin several drawings, which will render my description more easily understood.

In performing the operation with this apparatus, the patient may be placed in any of the usual positions for sounding, and after the bladder has been distended with fluid, the instrument is introduced into it, and used as a sound; when the stone is felt, the moveable blade is drawn backwards to a distance proportioned to the supposed size of the stone, then the instrument is carried a little further into the bladder, and by pushing the moveable blade forward again, it is ascertained if the stone be seized; if this be the case, the bruising force can be instantly applied. When the stone is broken, the fragments can be seized and treated in a similar manner. There is neither screw to be

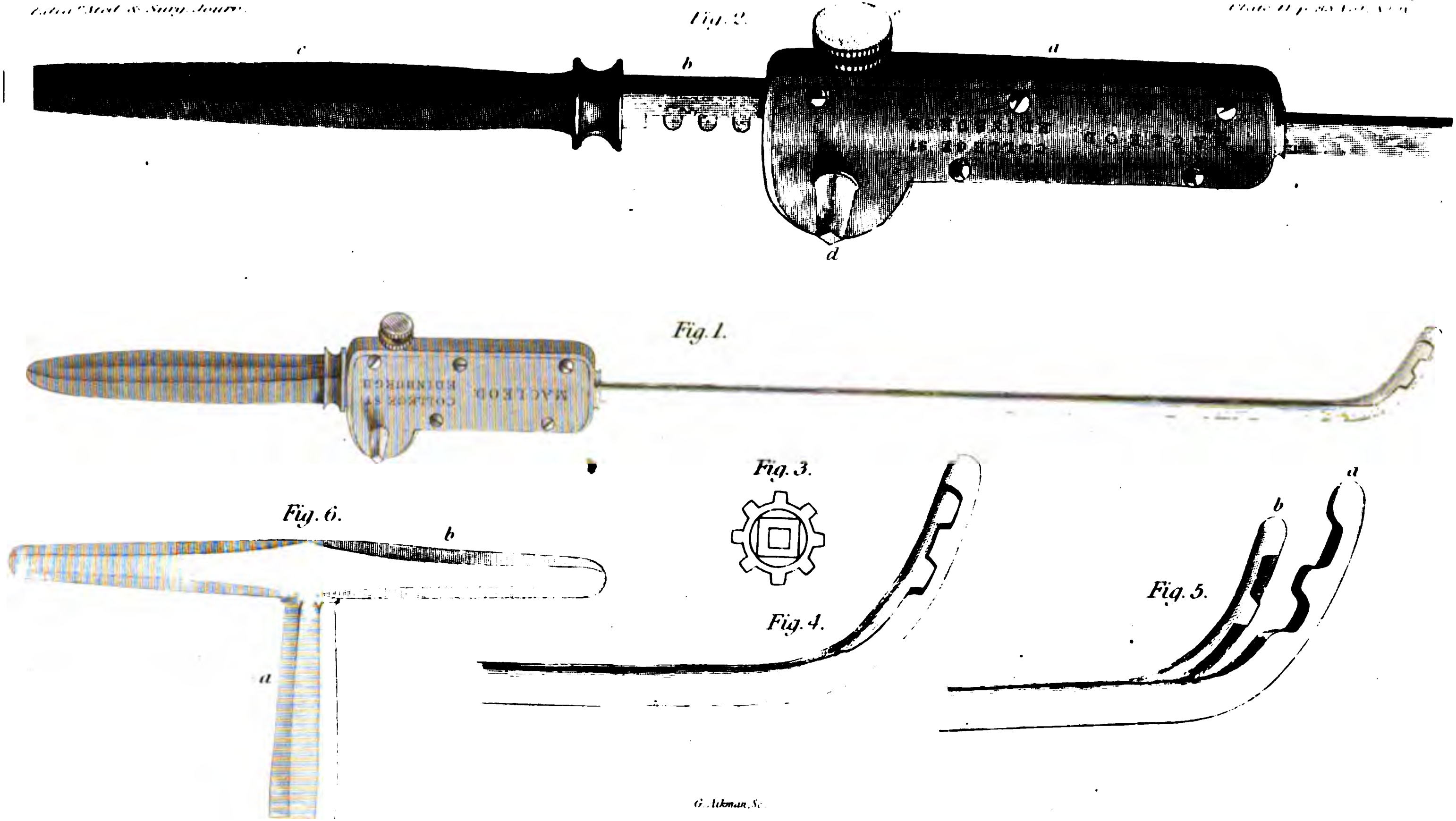

Fig. 2.

Fig. 1.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

G. Aikman Sc.

loosened nor tightened. The blades can be opened or shut in an instant, and the bruising force, if required, may be applied a dozen or twenty times to different fragments in the course of a few minutes. In applying the force, the handle may be so managed as to press the moveable blade steadily against the stone, or to cause it to strike suddenly, as when a hammer is used; and this latter style is of essential service when the instrument is to be withdrawn, as the fragments can be readily driven from between the blades by successive strokes, which could neither be so rapidly, efficiently, nor safely applied in any other way. To allow of the fragments to get readily from between the blades, it has been proposed to make an aperture in the bent part of the fixed blade. This might answer the purpose, but would undoubtedly weaken the instrument, and is not requisite in that which I recommend.

The instrument was constructed in the work-shop of our ingenious instrument-maker, Mr M'Leod, from whom I learn that copies of it have been sent to London, and to most of the chief towns in Scotland and the north of England.

I know not how often the instrument may have been used by different surgeons; but having seen it used frequently, and having operated with it myself repeatedly, both on the dead and living body, I have full confidence in its efficiency in cases where lithotrity is applicable. The percussion force may be said to have a better chance of breaking the stone; and the screw force, it may be argued, is more powerful; but those who talk in this way seem to forget the nature and size of the stone required to be crushed, as well as of the instrument used in the operation. With the hammer, or with the screw, the strength of a child might break either the stone or the instrument, and the same result would happen with the rack and pinion, particularly if the handle attached to the wheel was made very long, as in that case more force could be applied.

With any of these forces I believe that sufficient effect can be produced upon such stones as are usually found in the urinary bladder; and when this is the case, it appears to me that the instrument which can be most rapidly applied, which at the same time combines power with effect, and which, moreover, produces the least inconvenience and alarm to the patient, ought to be the one preferred, and such a one I conceive to be the instrument I have been induced to notice in this Journal.

Description of the Drawings of Mr Fergusson's Lithotritic Instrument.

Fig. I. The instrument with the blades closed, diminished to one-half of the proper dimensions.

Fig. II. Part of the instrument of the ordinary size.

a. A box containing the rack and pinion. This part is held firmly in the left hand, whilst the bruising force is applied.

b. Part of the rack which has been drawn out of the box. A scale on the upper part indicates the extent to which the blades are opened, or the size of a stone at the part where it is grasped.

c. The handle of the moveable blade on which the rack is formed.

d. The axis of the pinion on which the handle for applying the crushing force is fixed.

e. A small screw by which, when necessary, the two blades can be fixed firmly together, as in introducing or withdrawing the instrument; or when the stone is grasped, and it is wished to move the instrument in any direction previous to the application of the crushing force. A little pressure with the thumb is sufficient for this latter purpose, however, and is to be preferred.

Fig. III. The pinion wheel of the full size.

Fig. IV. The point of the instrument of the ordinary size with the blades closed. Small intervals are left between the blades; these, when the instrument has been successfully used, are filled with small fragments of the stone. This form of the instrument allows the blades to be shut, when about to be withdrawn, as accurately as when introduced; whilst, at the same time, fragments of the stone are removed along with the instrument. The shape of this part of the instrument as to curve, teeth, &c. is similar to that of Weiss's, Heurteloup's, Ségalas', and L'Estrange's. Great care is taken, however, that all the margins likely to touch the bladder are well rounded off.

Fig. V. The two blades a little separated.

a. The fixed blade; the strongest of the two, and grooved on its upper surface for containing

b. The moveable blade, which slides along within it.

The interval between the two blades can be increased or diminished at will. Its greatest extent in an instrument of ordinary size should be about an inch and a-half. A greater space, however, may be necessary for a large stone; but in such a case the whole instrument should be larger, and of greater strength.

Fig. VI. The handle by which the bruising force is applied.

a. The part containing the socket, by which it is fitted on to (*d.* Fig. II.) the axis of the pinion. It may be put on or removed at will. It is recommended not to be fixed; as, when this is the case, the moveable blade cannot be slid along so readily; nor is the touch, when the stone is between the blades, so perfect.

b. The part which is grasped by the operator's right hand when he is applying the force. It is here represented of the size and length in use; but it may be made much stronger and of greater length, if a deal of force be deemed necessary. It ought on all occasions to be proportioned to the strength of the other parts of the instrument. The longer it is, the more force may be applied; but this will endanger the instrument. More force may be applied with a handle of this size than it would be safe to use; it is, therefore, sufficiently large.

It may be remarked, that the construction of the instrument does not prevent the use of the hammer should it be preferred. I conceive, however, that, by gentle and repeated turns of the pinion wheel, by means of the above handle held in the operator's right hand, a sufficient force may be applied to break any stone in the bladder, on which it would be safe to use a lithotritic instrument.

There is an advantage in this apparatus, possessed by no other that I know of, which is, that, when the blades happen to be firmly fixed when closed, as is often the case after bruising several small fragments, they can be opened again with the greatest ease by turning the pinion wheel backwards. In other instruments the moveable blade must be drawn back with the hand, and this cannot be done in some instances without a deal of force, by which the blade may be suddenly jerked against the neck of the bladder, so as to cause much pain to the patient.

At one time I fancied, that, by the addition of several wheels, I might cause the moveable blade to slide more rapidly against the stone; but on reflection it appeared, that, whilst the instrument was thus rendered more complicated, I added little to its efficiency. I consequently preferred the more simple form, as described above.

An instrument of this construction, but of a more powerful make, might be of use to break a stone through the wound made for lithotomy, in a case where the stone is too large to be extracted with safety in its entire state.

Edin. 6, *Drummond Place*, 10*th April* 1835.

Art. VIII.—*Observations, Pathological and Therapeutic, on Diseases of the Pancreas.* By J. J. Bigsby, M.D., F.L.S., Senior Physician to the Newark Dispensary.

Diseases of the *pancreas*, at least as primary affections, are certainly very rare. They are scarcely to be met with in the periodical literature of English or French medicine;—being, however, more abundant in systematic authors on pathology.

Portal, in his *Anatomie Medicale*, relates seven cases of pancreatic disease, which occurred under his own eye, and he refers to others which he had witnessed.

Several cases occurred in Mr Bedingfield's practice at the Bristol Infirmary during the course of five years. Dr Pemberton seems to have met with some.

Drs Abercrombie of Edinburgh, Sewall of Philadelphia, and others, have each detailed more than one instance; so that disorders of this organ do not show themselves so seldom as to warrant a total neglect of their study, and particularly, as they present some peculiarities well worthy of attention in a practical point of view.

At the same time we must confess that there is no mention of them in any extensive register of disease,—such as the reports of the diseases of London in the Medical Repository—in Sir Gilbert Blane's tables of his public and private practice—in Blackmore's account of the diseases of Plymouth.

Dr Baillie, throughout his very large and prolonged experience, only saw one example of diseased pancreas. Andral gives similar testimony; but in a paper, written subsequently to his work on pathological anatomy, he gives a valuable case of scirrhous pancreas.

In the very accurate returns furnished by Sir James M'Grigor of the maladies of the British troops in Spain during their campaigns against the French under Napoleon, lesions of this viscus were only met with in fatal cases of dysentery.

For the complete disregard of the pancreas by the ancient fathers of medicine, the observers of the sixteenth century made ample amends. Highmore considered it the seat and source of apoplexy, palsy, and hysteria; while Schenckius, Fernelius, and Riolanus extended its influence to almost all the diseases of the human frame. Of late the importance of this organ in the animal economy has certainly been undervalued. That it is an important organ is proved by its invariable presence very low down in the scale of animal life.

By far the most copious notices of pancreatic disease are to be found in Abercrombie's Pathology of the Abdominal Viscera, and in an article by Dr Carter, on this *viscus*, in the Cyclopedia of Practical Medicine. That materials for a sketch of the derangement of the *pancreas* are not altogether wanting, will be seen in the sequel.

I have thought that it will be rendering a service to the profession to gather up the fragments and present them in the form of a compendious summary, for instant and easy reference.

Great obscurity does certainly exist in diseases of this organ, and they arise from the very gradual mode of their developement, from the simplicity or doubtful nature of its functions, and from its being deeply imbedded among parts performing important and well ascertained offices. But cases have been beneficially recognised during life; and even a cure has resulted from professional skill.

Mr Abernethy used to remark, very truly, that the *pancreas* is not so liable to disease as other glands, from the facility with which it secretes. As Broussais notices, its granules being close, and loosely imbedded in cellular texture, it is rendered little liable to inflammation; and the less so from the small quantity of blood which it receives. It does not seem so highly endowed with sensibility as other organs, and therefore is not so easily disturbed by sympathies. Its diseases have been seen, though not in any frequency, in almost every country where medical science has penetrated; neither are they confined to any age or sex.

I. These general observations being premised, I shall now give a brief outline of the anatomy and physiology of the pancreas;* and shall then proceed to treat consecutively of the morbid appearances observed after death in this organ, the symptomatology, diagnosis, and treatment of its diseases.

This gland is situated at the back part of the epigastric region below the stomach and liver, above the transverse portion of the duodenum, before the aorta and *vena cava*, and behind the transverse meso-colon. It is about six inches long in the adult, and about one inch thick. Its form is irregular,—being larger at its right end than at the left, elongated transversely, flattened from before backwards, and a little so from above downwards, presenting posteriorly a curvature which corresponds to the convexity of the spinal column. Its colour is yellowish brown, and its consistence considerable.

The right extremity of the pancreas, which from its size is called the head, is inserted into the hollow of the second curvature of the duodenum, and adheres to it strongly. Everywhere else this gland is fixed to the neighbouring parts by a loose cellular tissue, which forms around it a tolerably firm envelope, through which we easily distinguish the lobes and lobules of which it is composed.

In other respects, its structure is the same as that of other glandular organs, particularly of those which belong to the salivary apparatus. In some subjects, the right end of the pancreas has a very distinct prolongation, which many anatomists have named the *small pancreas*, and which has its own excretory duct, opening sometimes into the pancreatic canal, and sometimes directly and separately into the duodenum.

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* Partly from Dictionnaire de Med. et Chirurg. Pratiques.

The excretory duct of the pancreas is formed like other canals of this kind, by the successive junction of many branches, which unite at an acute angle near the left extremity of the gland, which is thin and prolonged, and therefore is called the tail of the pancreas. It proceeds in this manner from left to right, receiving in its course very many other branches, which join it at right angles, and which increase its calibre often to the breadth of a line and a-half. It traverses the thickness of the gland a little nearer to the inferior edge than to the superior; and in leaving the pancreas after a short course, it pierces, obliquely from above downwards, the membranes of the duodenum, and opens into the cavity of that intestine four or five fingers' breadth from the pylorus, towards the bottom of the second curvature of the duodenum. Sometimes it penetrates the duodenum at the distance of ten inches from the *pylorus.* Most commonly its orifice is distinct from that of the *ductus choledochus*, but it is not unusual to see them enter together.

The pancreatic duct enlarges progressively towards its outlet, but contracts again at its entrance into the *duodenum;* what has been considered as a valve at the last mentioned place is only a partition separating it from the *ductus choledochus.*

The pancreas receives many blood-vessels, but they are small and do not carry sufficient blood to colour it (Bichat;) its arteries come from the hepatic, splenic, mesenteric, superior, capsular, phrenic, and stomachic coronary. Its veins discharge their contents into the duodenal, right gastro-epiploic, splenic, and lower mesenteric veins, which themselves open into the abdominal *venæ portæ.*

The nerves belong to the hepatic, splenic, and superior mesenteric plexus.

The pancreas secretes a thready fluid analogous to saliva, but not identical with it, according to Tiedeman and Gmelin.* These physiologists collected ten drachms of this fluid from a large butcher's dog. It was limpid and opaline. It poured forth in filaments like the white of an egg, and spread out in water. It had a distinctly but feebly salt taste. It contained no mucus; while mucus, together with a peculiar substance, is found in saliva. There was twice the quantity of solid residuum in this pancreatic fluid as in the salivary. Saliva is neuter; while the pancreatic juice taken from this dog contained a little free acid. A similar result was obtained by the experiments of Lassaigne and Leuret. The saliva of the sheep contains an alcaline sulpho-cyanuret; the pancreatic fluid, none. The other salts of these two secretions are the same.

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* Recherches Experimentales sur la Digestion, Tom. i. p. 24 and 42.

Magendie's account of this fluid, though not so full, corresponds with that of Tiedeman.—(*Precis Elementaire de Physiologie*, T. ii. p. 267.)

We have not yet ascertained the express use of the pancreatic fluid; but we see that it has some reference to the process of digestion, and that at least it dilutes the chyle in its passage.

Drs Tiedeman and Gmelin think that, as it contains a large quantity of highly azotised principles, it assists in animalizing such vegetable food as does not contain azote.

Like all the glands, the pancreas is greatly developed in the fœtus. Meckel has remarked that its excretory duct is constantly double in the early stages of existence;—that is to say, that independently of the permanent canal, there is a second which opens separately into the duodenum. Sometimes the congenital double condition does not disappear at birth.

II. ANATOMICO-PATHOLOGICAL CHARACTERS OF DISEASES OF THE PANCREAS.

The forms of pancreatic disease, as ascertained by dissection, are the following: 1. Atrophy; 2. Hypertrophy; 3. Internal Hæmorrhage; 4. Inflammation, with suppuration, ulceration, and gangrene, its consequences; 5. Scirrhus; 6. Tubercle; 7. Steatoma; 8. Calculi; 9. Rupture from external violence.

Atrophy.—By this expression we mean a diminution of bulk from a loss of interstitial substance. Portal calls it a wasting. The cause he conjectures to be some compression exerted on its arteries or nerves. Its usual supply of blood and innervation may also be transferred to other parts by a variety of causes.

In the present signification of the word, Atrophy of the pancreas is very seldom met with. It has been alluded to but not described.

Hypertrophy.—"This gland," says Dr Townsend in the Cyclopedia of Practical Medicine, "is sometimes greatly hypertrophied,—and as the cellular substance, which intersects its substance, participates in the affection, the viscus loses a good deal of its natural appearance, and is converted into a hard white mass, intersected by opaque membranous septa, not unlike scirrhus in other parts of the body."

What the symptoms are which this state of the gland produces I do not know. It is generally met with after severe structural disease in other parts of the body. Portal states that the increase of dimensions is sometimes very great.

The causes are usually very obscure:—but we have reason to believe that they are those of hypertrophy generally.

Internal Hemorrhage.—Dr Storck, in his *Annus Medicus*, p. 244, describes minutely a very interesting case, which I take to have originated in internal hemorrhage. After death the pancreas was found to weigh thirteen pounds.

It was converted into a membranous sac, full of blood, partly grumous, and partly coagulated; its sides could be separated into lamellæ. In fact it had become organised. Dr Storck thought that the gland had become gradually distended by the breaking of a blood-vessel in its centre. The subject, a female, aged 24 years, had vomited violently during menstruation, on which this evacuation ceased, and great anxiety, palpitation in the region of the heart and in the *præcordia* generally, with fainting fits, supervened. A large heavy tumour soon afterwards appeared in the epigastrium. These symptoms continued with greater or less severity for three months and a half, when the patient was suddenly seized with acrid bilious vomiting and diarrhœa, succeeded speedily by great debility, emaciation, and death.

Inflammation.—It is remarkable that neither Baillie, Meckel, nor Andral mention simple inflammation of the pancreas; yet we shall be enabled to give some account of the lesions produced by it from the cases and dissections related by Morgagni,[*] Portal, Gendrin, Crampton, Percival, Lawrence, and others.

Simple inflammation may be acute or chronic. When it is acute, Gendrin very accurately states the morbid appearances in the following terms:—"It is recognized by the redness of the substance of the pancreas, the injection and infiltration of its interlobular cellular tissue. The first of these characters has been noticed by Portal, the others by Morgagni, in a subject in which inflammation of the pancreas had as yet but little advanced, and which only occupied the lower part of the organ. The injection and infiltration of the cellular tissue rendered the lobules more distinct.[†] Morgagni also remarked that they were denser. When the inflammation is more intense, the organ is brownish red, its tissue softened, and much easier torn than in the sound state. We find an example of this in Morgagni."—(Epist. Anat. xxvi. Art. 31.)

Gendrin proceeds to say, "that we are led to assign for the anatomical characters of chronic inflammation of the pancreas a great augmentation in density of its tissue, which tumefies and becomes drier, more elastic, and of a reddish or whitish yellow colour. We also sometimes find red spots and infiltrations of blood, as if incorporated in the condensed cellular tissue, but this alteration, which was seen in our patient, (paragraph 863) does not seem to be very constant. The pancreatic canal has been found obliterated by a powdery chalky matter, evidently the product of a sort of precipitation from the pancreatic fluid. —(H. A. Tom. i. p. 262.)

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[*] Morgagni, Epist. Anatom. xlv. Art. 23, and Epist. Anat. xxvi. Art. 31. Portal, Anatomie Medicale, Vol. v. Gendrin, Histoire Anat. des Inflam, Tom. i. p. 262. Crampton and Percival, Trans. K. and Q. Coll. of Phys. Dublin, Vol. ii. p 134, &c. Lawrence, Trans. Med. Chir. Soc. Vol. xvi.

[†] Lerminier in his Clinique Medicale, T. ii. p. 409, confirms these observations,—and adds, that the tumefaction was specially owing to the engorgement of the interlobular cellular tissue, and further observes, who does not perceive a great analogy between this state of the pancreas, and that sometimes presented by the parotids in severe fevers?

In Dr Crampton's fatal case, occurring in the person of John Doyle, the pancreas was precisely as represented by Gendrin in his brief sketch of chronic inflammation of this viscus. It was hard and enlarged, particularly at its head, which pressed upon the gall-ducts, and obliterated the *ductus communis.* All the parts about the gall-ducts were knotted together by adhesive inflammation. There was much serum in the abdomen, and the liver contained some vomicæ. The other organs of the body were sound. The colour of the substance of the pancreas is not mentioned here.

The very singular case published by Mr Lawrence, (Med. Chir. Trans.) exhibited appearances *post mortem* in near correspondence with those above stated. The cellular texture around the pancreas was loaded with serum; the viscus itself was of a dull deep-red colour, contrasting strongly with the remarkably bloodless state of all the other parts of the body. It was firm in texture; the lobules, also, when divided, were firm and crisp; it was otherwise healthy. The spleen was turgid, and rather large. The membranes lining the thorax and abdomen, together with all the viscera contained in those cavities, except the pancreas and spleen, were bloodless, and peculiarly pale, as in persons who had died in a state of *anæmia.* There were traces of inflammation in the *dura mater* and *pia mater.*

This case occurred in a lady during pregnancy. That something unusual had taken place, was evinced by her very blanched appearance,—by great thirst, and by her complaining of a dull pain across the middle of the abdomen. There were scarcely any other symptoms. It was left to the scalpel to reveal the seat of the disease. The high degree of *anæmia* which occurred in this case, and in another person with carcinomatous pancreas, as related by Dr Abercrombie, may lead to the belief that the pancreas is an important agent in sanguification; but the cause of the bloodlessness must be sought elsewhere; for these are mere exceptions to the general rule, if we judge from above fifty examples of pancreatic disease.

Abscess.—Cases in which the sole or prominent evidence of disease is suppuration or abscess within the substance of the pancreas, are by no means uncommon. They are narrated by Baillie, Percival, Portal, Gendrin, &c. Many cases are inserted from other authors in the first book of Lieutaud's *Historia Anatomico-Medica.*[*]

Inasmuch as neither the severity of the symptoms, nor their nature, as at present understood, is any measure of the intensity of the inflammation, we can only fear that suppuration has taken place when we observe in the patient the usual constitutional symptoms of that process.

When an abscess is forming in the substance of the pancreas, the pus is infiltrated into its interlobular tissue. "The glandular granules are very soft, of a reddish-gray colour, and sometimes manifestly lessened, although the whole organ is usually enlarged, but not always. The investing capsule is itself very much inflamed, and is sometimes rendered thicker by false membrane, as occurred in a body opened by Portal. When the suppuration is completed, the pus is usually collected in one cavity, which occupies the whole organ:—of this there are on record numerous examples. In the greatest number of cases, the inflammation of the pancreas is but partial. Sometimes in this way the pus is infiltrated into a moderate sized cavity, mixed with a clear yellowish fluid, and whitish curds. A gray pulverulent pus occupies the most dependent part of small cavities, as was the case in an abscess which we saw. We cannot doubt but that there was there a true mixture of the product of the secretion of the gland with that of inflammation."[†]

In large purulent deposits, the matter is commonly inodorous and creamy. Portal has collected two pounds of it from one sac. It had a green tinge in one of the numerous cases recorded in Lieutaud. Bartholin found it very fetid, but the abscess opened into the intestines. Gendrin once saw a vast sac full of grayish, very fetid pus, formed in the situation of the pancreas, and in communication with the jejunum, which was perforated at its origin to the extent of an inch. The parenchyma of the organ was represented by a reddish, dense, friable mass, which, together with the surrounding cellular tissue and the coat of the intestine, constituted the walls of the great cavity.

The substance of the inflamed pancreas sometimes remains unchanged in the midst of a considerable collection of pus deposited in the cellular tissue. The lobules of the gland are then as if they were separated by dissection, and the organ swims in pus. Lieutaud has reported many facts of this kind. (Gendrin, op. cit. p. 239.)

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[*] Baillie, (Cooke, Diseases of Digestion, p. 67.) Percival, Trans. K. Q. Coll. Phys. Dublin, ii. Portal, Anatomie Medicale, Tom. v. Patin and Aubert, (Lieutaud. Hist. Anat. Med. Tome i. 245.) Tulpius, (Bonetus, l. iv. sect. vii. obs. 4.) Gendrin, op. cit.

[†] Gendrin, op. cit. p. 237.

Portal (*Anatomie Medicale*, T. v. p. 353,) has the following observations on this subject:—"There are," says he, "diseases of the testicle which affect the lumbar region, and give rise to suppuration in the pancreas or its neighbourhood. In a man who died after castration, where the spermatic cord was tied, I saw a great quantity of pus in the cord itself, and a considerable abscess around the pancreas. Antoine Petit cites many examples of this in support of his opinion against the ligature of the cord."

Very few morbid appearances have been noted in the other organs of the body in inflammation of the pancreas. In only one case to my knowledge were the gall-ducts obliterated by pressure; it was in that reported by Dr Percival.

Sphacelus.—When the inflammation is very violent, sphacelus may supervene. Gendrin (op. cit.) quotes a well characterized example which occurred after chronic inflammation. He adds, as extremely probable, that, as in other tissues, the acute inflammation only passes readily and completely into the state of sphacelus, after chronic disease has weakened the organ.

Portal (op. citat. T. v. p. 353,) states that gangrene of the pancreas is a frequent consequence of its having became inflamed. He witnessed this on many occasions, and specifies the lesions as they showed themselves in the dissection of a tradesman of Rue St Denis, in Paris, who died under this malady. The pancreas was here of a violet-red colour throughout; it was softened to a pulp, and permitted the escape outwards of a black fetid fluid. It was, in fact, in a state of universal sphacelus. Certain parts of the stomach and duodenum were inflamed.

I only know of two more instances of sphacelus. They are those related by Barbette and Greisel (Lieutaud, T. i. obs. 1056.) They merely state the fact.

Carcinoma.—I have had no difficulty in collecting twenty-eight cases[*] of *carcinoma* of this *viscus*,—all, with the exception of five from Bonetus, narrated with considerable fulness and precision. Very many more instances are on record in a less accurate form.

Of these twenty-eight cases, sixteen occurred in the male sex.

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[*] Abernethy's Lectures, Lancet xii. 66. Abercrombie's Diseases of Abdom. p. 392, 393, 394. Sandwith, Ed. Med. Surg. Journal, xvi. p. 380. Martland, Ed. Med. Surg. Journ. xxiv. p. 73, 79. Percival, Trans. K. Q. Coll. Phys. Dubl. ii. p. 133. King, Med. Chir. Rev. vii. p. 493. Heberden's Comment. p. 460. Sewall, Med. Phys. Journ. xxxi. p. 94, 96. Bonetus, lib. iii. sect. 8, obs. 53, 55,—lib. iii. sect. 7, obs. 6, 20, 51,—lib. ii. sect. vii. obs. 130. Lieutaud, Hist. Anat. Med. Tom. i. p. 240. Archives de Sciences, Med. Andral, xxvii. p. 117. Duponchel, Med. Repos. xxii. p. 162. Lancet, ii. 1828, 1829, p. 177. Vidal, Nouvelle Biblioth. Medicale, Tom. vi. p. 101. Velpeau, Andral, Pathol. Anatomy, Vol. ii. 345.

Fourteen were forty years old, and upwards. Of the females, nearly all were past fifty years of age. There are included three boys, two, eight, and eleven years old, respectively, (Lieutaud, Martland, Kerckring.)

The utmost irregularity prevails with respect to almost all the circumstances of this disease,—its duration, symptoms, appearances on dissection, and the subjects of attack. Carcinoma sometimes attacks almost every organ of the body in the same individual, and leaves the pancreas untouched.

Its origin and progress is the same in this gland as in any other. There is every reason to believe that it begins in simple induration,—for such a condition is common, either alone or mixed, with carcinoma in any or all its forms.

Enlargement usually takes places; and, on rare occasions, even so as to equal the dimensions of the liver. Only in two instances, with which I am acquainted, is it distinctly stated not to have increased in size.

The disease may occupy the whole pancreas; but usually only a part. It is often diffused irregularly, and with undefined boundaries through the organ, which is elsewhere hardened, simply. Its peculiar texture is usually termed, concisely, scirrhous; but this epithet is used by competent observers, such as Andral, Abercrombie, Heberden, Sandwith, and others. Where it is characterized with greater minuteness, it is said, in the first or hard stage to be gristly, dense, and heavy, like cow's udder. In a case related by Bonetus, the scirrhus was arranged in balls of the size of a pigeon's egg.

In seventeen cases out of twenty-eight of carcinoma of the pancreas, the disease did not arrive at the stage of softening, although some of them had existed for years; it was purely scirrhous.

When the whole organ is not implicated, it commonly invades the head,—the most important portion. The tumid part is then apt to compress the duodenum, so as to render the *ductus communis* of the liver totally impervious, and thus occasion extensive hepatic disease. The liver suffered severely in the cases reported by Martland, Percival, and King.

The swelling may also press upon the pylorus, and even communicate to it a scirrhous texture. In two examples of this malady, given in some detail by Dr Sewall, it had nearly obliterated this passage.

In an instance of only three months duration, for which we are indebted to Dr Percival, the pylorus was not only scirrhous, but likewise contained several small abscesses,—a rather singular circumstance.

When a portion only of the pancreas is affected, its duct may remain free, (King;) otherwise it is commonly closed, and especially the mouth of the duct, when the head is concerned; and then, as Dr Carswell observes, the organ swells from retained secretion. In five cases, three of which are furnished by Dr Abercrombie, the others by Andral and Vidal, the scirrhus had at the time of death passed into the soft state, called *cephaloma* by Dr Carswell, but medullary *sarcoma* by previous writers. Some parts, however, were still as hard as cartilage; but the others had all the pulpy, pale yellow, brain-like character of the second stage of scirrhus. In two of Dr Abercrombie's cases, the *cephaloma* was distributed in yellow and white layers.

Andral's case was remarkable during life for the nature and severity of the pain; which was accounted for after death by the fact then discovered, that great compression had been made on the abdominal aorta, and the plexus of nerves which spread themselves out on that vessel.

In M. Vidal's instance, where death took place from sudden hemorrhage, examination of the body showed a large and deep ulcerated cavity in the cephalomatous head of the pancreas, communicating by a wide opening with the duodenum. At the bottom lay a clot of blood as large as a nut.

In an example not unlike this of M. Vidal, seen at Cadiz by Dr Duponchel, the pancreas was changed into a sac, with a few shreds of *cephaloma* here and there on its sides, and much brownish matter, like coagulated blood.

In two cases related by Abernethy and Heberden, respectively, (the subject of one was only twenty-three years of age,) no vestige of any form of scirrhus remained. The gland was altogether in a state of cancerous ulceration.

The twenty-eight cases from which I have drawn up the above short statement, I selected because they seemed to be idiopathic; and therefore might be expected to present easily interpreted phenomena.

In none of these has any disease been detected after death in the head or chest; and the abdominal lesions have been almost wholly confined to the stomach, liver, and duodenum.

In eight cases, and those of long standing, not the slightest derangement had advanced beyond the pancreas.

The mucous coat of the stomach is only once (Sandwith) said to be erythematous. Dr Abercrombie found all the coats thickened in this latter subject; the stomach, duodenum, and arch of the colon adhered to the scirrhous mass. The stomach and intestines have been found much contracted. (Sewall.) The pylorus occasionally adheres to the pancreas; and thus connected it has been seen sound, enlarged, and indurated, or enlarged and containing *vomicæ*, (Harder and Percival); or, again, even truly scirrhous.

The liver has been met with more or less increased in bulk, natural in consistence and colour, green, (King;) or quite pale and bloodless. (Harder and Abercrombie.) Its peritoneal coat sometimes has inflammatory adherences to the surrounding parts. (Martland.) It has tubercles imbedded sometimes close beneath it. Small white tubera have been found in the parenchyma of the organ.

The gall-bladder is often very much enlarged from the obliteration of the *ductus communis.*

Excepting inflammation from compression, I have not met with an instance of any other disease of the duodenum, or of the intestines generally.

In an old standing case which occurred in a surgeon (Bonetus) the cancer which affected the pancreas had extended to the kidneys.

According to Begin (Diction. de Med. et Chir. part iv. 481,) carcinoma of the pancreas often follows that of the small curvature of the stomach,—of the lower portion of the liver, or is consecutive to the cancerous masses which now and then are developed in the cellular tissue by which the pancreas is surrounded. The disease did not originate in any of these three modes in the examples of it which I have collected.

Tubercle.—I only know of two instances, in any detail, of the deposition of tuberculous matter in the pancreas. In Andral's case of carcinomatous pancreas, the confused mass exhibited distinct traces of this substance. Mr Cooke, in his work on indigestion, mentions that Dr Venables found the pancreas scrofulous, hardened and tuberculous, with cheesy matter interspersed. The patient was strumous and hydrocephalic.

Portal has seen this organ tuberculous in highly scrofulous subjects. (Anat. Med. Tome. v. 355.)

M. Clermond Lombard, however, states, that in 100 cases of tuberculous disease in children, which he examined, he found tubercle five times in the pancreas,—results very different from those obtained by the anatomical labours of Dr Carswell. (Encyclop. of Pract. Med. iv. 257).

Sarcoma.—Mr Langstaff relates a case (Medico-Chirurg. Trans. ix. 340,) where *tuberculated sarcoma* had taken possession of the pancreas, and, indeed, of most of the organs of the body.

Steatoma.—In examining the body of a man 40 years old, M. Portal (op. cit. v. 357,) discovered the pancreas to be immensely large and full of steatomatous concretions. It had a coating of the consistence of suet, about half an inch thick. The steatoma existed also in the mesenteric glands. He says that these tumours are sometimes found in great numbers in this viscus, both hard and soft, white like suet or honey yellow.

Calculi.—Just as they have been found in the salivary glands, calculi have been met with in the ducts of the pancreas, though very seldom.

They are usually white, and vary very much in shape, size, and number. In Dr Baillie's case, they were of the size of a hazlenut; in that of Graaf, (Lieutaud, Tome. i. obs. 1045,) they were as large as peas. Gendrin (op. cit. Tome. ii. 262,) mentions that the pancreatic canal is sometimes clogged up with a chalky powder.

As the pancreatic duct is less sensible than those of the liver, kidneys, or bladder, it is not often that much inconvenience or pain is complained of; even when the passage, upon examination after death, seems to have been kept by its contents on the stretch.

Portal found twelve calculi in a man who died suddenly of aneurism of the aorta. The tumid pancreas pressed that artery so firmly against the spine that the portion above the organ was much dilated, as far as the heart; and even the left ventricle of the latter was in a state of dilatation. The part of the aorta below the pancreas was, on the other hand, so contracted that the little finger could hardly be introduced.

Bonetus has a case in which four calculi were found; but they were accompanied by no symptoms worthy of remark.

Worms have been found in the pancreatic duct; but they had evidently crept there from the duodenum. (Lieutaud).

Rupture.—A woman was thrown down by the wheel of a stage-coach. She died a few hours afterwards. The *pancreas* was found, on *post mortem* examination, to be completely torn through in a transverse direction: there was also laceration of the liver; together with extensive effusion of blood into the abdomen. Some of the ribs were broken, (Travers, Lancet, xii. 384.)

III. SYMPTOMATOLOGY.—Symptoms of inflammation of the pancreas, whether the case terminate in the first stage of congestion and induration, or in any of the subsequent stages, are primary or secondary,—direct or indirect. Of the first kind are pain and enlargement. Pain in the pancreatic region does not occur in every instance, but the exceptions are rare. It is seated deeply in the middle of the epigastrium, or even in the back, and wanders from thence like the colic, first to one part, and then to another; sometimes extending even to the chest. When there is no tumefaction, the pain is not affected by strong pressure: but it is increased by the presence of much food in the stomach.

The enlargement of the gland is not often to be detected during life; at least, only in four cases out of fifteen with which I am acquainted was it recognized. In these four cases, a dense, hard, fixed, sensitive swelling was perceptible in the centre of the epigastrium, quite distinct from the liver or stomach, and rising from the interior of the abdomen.

The secondary or indirect symptoms are dependent on pressure or sympathy. The only organs thus affected are the stomach, duodenum, and liver. The stomach usually gives early intimations of mischief by the imperfect manner in which digestion is performed: the latter becomes slow, painful, and flatulent. When a considerable quantity of food is taken, vomiting comes on, and relieves the pain; where there is no vomiting, there is diarrhœa; the matters discharged not possessing any peculiar character.

The intestinal digestion is also impaired; for the duodenum is always much irritated by pressure, which is sometimes so great as to impede the flow of bile into it.

I am not aware that the liver is disturbed to any extent, until obliteration of the *ductus communis* is completed, or nearly; but then we have all the symptoms of inflamed or disorganized liver, such as a jaundiced state of the skin, saffron urine, pain, with swelling in the right side, occasional pyrexia, ascites, &c.

The other abdominal organs show only those derangements of function which we might expect from the constitutional disturbance. This varies much; it is seldom great; the degree of fever usually present rather resembles a slow, undermining, irritation. The brain remains clear; and the heart and other organs of the chest are comparatively tranquil. In two cases the pulse was intermittent. Unless an hepatic affection is superinduced, the complexion and alvine evacuations remain natural.

What the causes of inflammation of the *pancreas* are, we are not informed by the narrators of the cases I have seen; many probable ones might be specified.

Carcinoma.—The symptoms of *carcinoma*, in any of its forms, are much the same as in inflammation of this gland. The chief difference lies, perhaps, in the amount of the pain, and in the more tardy progress of the complaint. The pain is severe in almost every instance; but none whatever was felt by an elderly gentleman who died three months after requesting medical assistance; (Percival;) and in another, it was simple uneasiness. Its seat is the same as in pancreatic inflammation; and it is of the same wandering nature.

Distension of stomach by food, or of the colon by feces, usually aggravates the pain. Pressure, even when applied forcibly, on most occasions does not augment it; but it does when a tumour is perceptible during life. It is sometimes greatly increased by the erect posture, so that in the example of Augustus De Thou, in the two cases of Dr Sewall, and in that of Mr Abernethy, the patients always stooped. The pain becomes aggravated as the complaint proceeds, and is often continued and excessively violent. In the case related by Andral, it was situate in the dorsal region, and was almost intolerable; shooting into the left side of the thorax for hours, and even for days, besides pervading the whole abdomen. The pain resembled blows with a hammer, or stabs in the back with a dagger. It was worse in the night than in the day.

The countenance usually bespeaks great suffering.

Fever in some instances is present in a low degree; but in many there is none until quite the latter period of the disease.

There is usually great emaciation.

The other lesions of the pancreas which we have enumerated, only becoming known after death, or only having been seen very seldom, we cannot as yet give any accurate account of the symptoms they produce.

IV. DIAGNOSIS.—On most occasions it is impossible to distinguish diseases of the pancreas from each other, and it is very difficult to separate them from the disorders of other organs; but both these objects are very desirable in practice, and now and then may be accomplished.

The simple or perhaps unascertained nature of the functions of this organ stands much in our way, as well as the small number, ordinary kind, and variability of the symptoms. Most of them arise secondarily from disorder of the *primæ viæ* or liver. The pain differs from hepatic pain only in seat.

The diagnosis rests much on negative evidence;—if there be no group of symptoms evidencing important disease of liver, stomach, intestines, omentum, or lumbar abscess, and there be deep-seated weight or pain above the umbilicus or in the back, vomiting after food, (not after the first morsel,) tolerable appetite, healthy stools; if there be good spirits, with a clear intellect, emaciation, and low fever, then pancreatic inflammation may be strongly suspected, especially when the usual treatment for hepatic or stomachic complaints has failed.

If a tumour be perceptible externally, similar to those seen by Drs Crampton and Percival in the centre of the epigastrium or thereabouts, and detached from any of the great viscera, the true nature of the case becomes plain.

When ordinary care cannot discover any such tumour, a more minute examination may succeed; and this is facilitated by the usual emaciation, unless this be masked by ascites or anasarca. The best time for exploration is early in the morning, before breakfast,—the lower bowels having been emptied by a glyster. If we then pass our hands firmly from the sides of the belly to the middle, we may perceive a more or less circumscribed hardness in the situation of the pancreas, which, when pressed by the single finger, may cause pain. In the article "Diseases of the Pancreas," in the Cyclopedia of Practical Medicine, Dr Carter advises one hand to be placed on the back, and the other on the stomach of the patient, and then, during the employment of considerable pressure, an expression of deep-seated pain may perhaps be elicited.

Inflammation of the pancreas can scarcely be distinguished from carcinoma, except where the former is very acute, although such discrimination is desirable. The circumstances which may guide us are, in carcinoma, its insidious commencement, greater duration, the increase of suffering, the absence of fever, tint of skin, and the steadily augmenting emaciation.

V. TREATMENT.—Atrophy of the pancreas cannot be combated, as its presence is not even suspected during life. Hypertrophy, if discovered, which rarely happens, is to be considered a very chronic subacute inflammation. I only know of one case of internal hemorrhage. Its treatment must be conducted on general principles.

Where inflammation is suspected or ascertained, the indications are, 1*st*, to subdue inflammation; and, 2*dly*, to relieve troublesome symptoms.

Inasmuch as the inflammatory diseases of this organ do not run their course rapidly, and as the system does not sympathise vehemently with them, although a certain degree of energy is required to ward off ulterior consequences, too great an activity is to be deprecated.

General bleeding is seldom necessary. A dozen leeches should be applied to the abdominal parietes immediately over the seat of the pancreas; and they should be repeated from time to time while pain or tumour remains, and while the strength permits.

The tartar emetic ointment may be rubbed into the side, or a blister applied; and in the situation here pointed out,—not to interfere with the leeching.

Poultices and fomentations have been useful.

Severe purging should be avoided, as the duodenum is usually in an inflamed or irritable state; but it is advisable to procure two motions daily, with the help of two drachms of castor oil, and five drops of laudanum; or by means of effervescing saline aperients, lenitive electuary, or equal parts of sulphur and supertartrate of potass in small and oft-repeated doses.

The irritability of the stomach is best obviated by attention to the quantity of the ingesta, and by a succession of sedatives in small and repeated doses,—such as *conium*, *hyoscyamus*, hydrocyanic acid. Dr Whytt's favourite dinner draught, consisting of six drops of laudanum, and as many grains of calcined magnesia, in peppermint water, tranquillizes the stomach excellently. Dr Carter prescribes on this occasion a drachm of the tincture of senna, with five minims of laudanum, in an aromatic fluid medium; or small portions of calumba, soda, rhubarb, and capsicum, combined in the form of a powder.

In no form of pancreatic disease should mercury be used;—for, as all the compounds of this metal are the specific stimulants to the salivary glands, they are so in all probability to the pancreas.

If the secretion of the inflamed organ be increased, while the canal for its discharge is closed up, nothing but mischief can result;—the tumefaction will increase; the neighbouring parts will probably be injured by pressure, and the whole constitution will sympathise deeply.

Under the treatment now laid down, the disease may be expected to subside, or to assume the chronic form. In Dr Crampton's case, its gradual disappearance, under the use of appropriate means, was beautifully exemplified.

In the chronic stage of the inflammation, we must trust to sustained but very gentle catharsis, especially as induced by the use of mineral waters. The internal and external employment of iodine, occasional leeching, and external derivation may be required.

When we have to deal with a carcinomatous affection of the pancreas, it is only common prudence to be very mild and cautious in our operations. A main part of our duty is to obviate unpleasant symptoms as they arise.

The complaint may be in its first stage. To bring on the second will be to increase the patient's suffering, and hurry him to his grave. Drastic purgatives, or violent, debilitating remedies of any kind must be avoided.

Our interference should be limited to the periodical application of leeches, and of anodyne fomentations, to the abdomen, with a small blister occasionally.

As a loaded state of the colon is always productive of increase of pain, glysters are beneficial.

We should endeavour to lessen nervous sensibility, and to produce a change in the nutrition of the organ, by putting the system under the gentle influence of the sedatives before spoken of. Opium should be withheld as long as the patient's sufferings will allow, for many reasons.

The diet should be easily digestible, very nutritious, and taken in small quantities at a time, and frequently.

ART. IX.—*Account of the state of the Arteries, in a case of Double Iliac Aneurism, in which both External Iliac Arteries had been secured by Ligature.* By Mr JOHN TORBET, Surgeon, Paisley. In a Letter to the Editor of the Edinburgh Medical and Surgical Journal.

SIR,—According to my promise, I now send you the arteries concerned in the operations performed by Mr Tait in the case of double femoral aneurism, occurring in the person of David Cumming, as related in the Edinburgh Medical and Surgical Journal of July 1826, (Volume xxvi. p. 92.)

The case is there so fully detailed, that there is now nothing to add; the only other desirable information being the condition of the arteries effected by the ligatures.

That appendix I now send you.

In a case like the present, it would have been desirable to have had the whole anastomotic branches of each limb minutely injected and displayed; but out of an hospital, that kind of preparation is impossible. As matters were, I attempted to inject the arteries. On the one side my attempt was unsuccessful; on the other, as many of the anastomosing branches were injected as we could take away. The body was very dropsical; the time consumed necessarily considerable, so that at the end we were much hurried by the impatience of the relatives.

Mr Tait died in May 1827, and since his death, David Cumming was my patient. With regard to the man's general health, it was very tolerable till the winter of 1830–31. During the winter months of every year, he had more or less cough; breathlessness at all times on climbing a stair or making any exertions. His legs were always more or less swollen, but he was for the most part able to walk about, and to do a little work at his favourite occupation of grooming.

In the winter of 1830–31, his cough and breathlessness were much worse than usual. Towards the spring, symptoms of general dropsy appeared; during the summer he got worse and worse, and on the 15th September 1831 he died.

I am, Sir, your obedient servant,

Paisley, May 14, 1835. JOHN TORBET.

Med. & Surg. Jour.

STATE OF THE ARTERIES IN THE CASE OF DAVID CUMMING.

Plate IV, p. 102, Vol. XLIV.

Fig. 1.

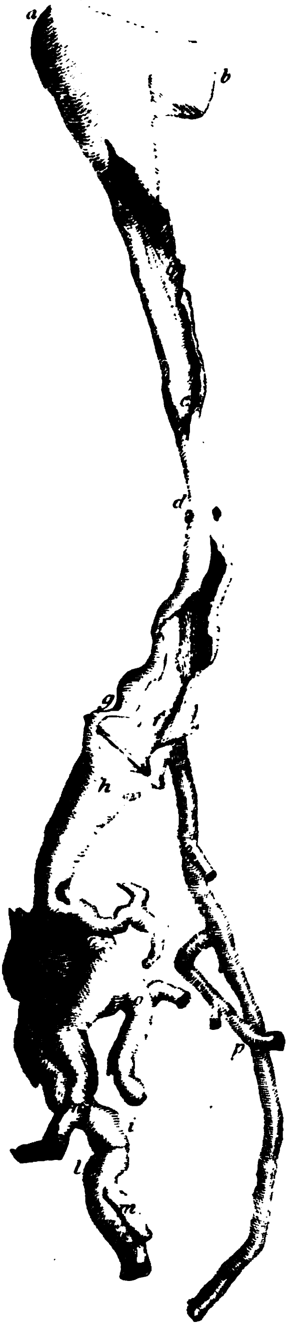
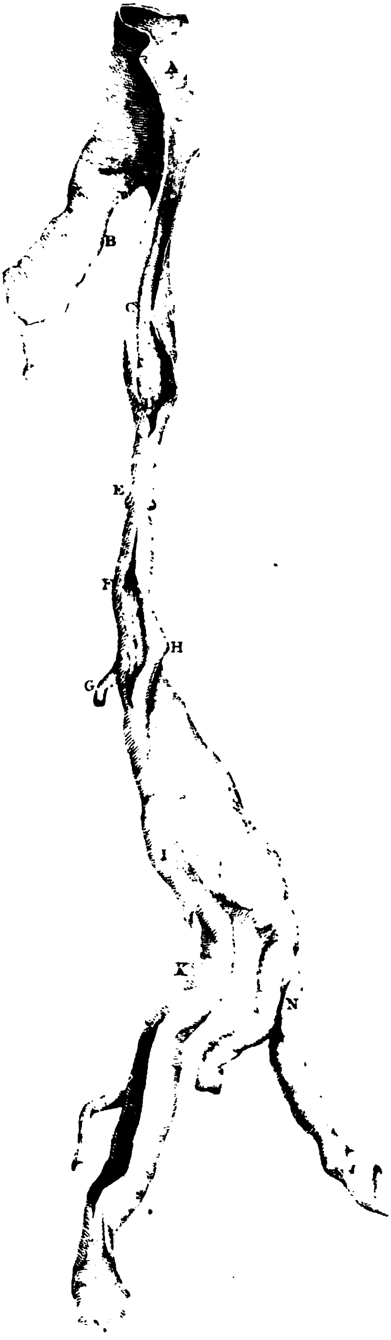


Fig. 2.



G. Aikman, Sc.

In both arteries the tunics are much diseased; being indurated and affected with deposition of osteo-steatomatous matter, especially at the bifurcations. Both aneurismal tumours, though shrunk and greatly diminished in size, and completely impervious, are very hard and solid, and resemble dried leather or cartilage.

Explanation of the Figures. Plate IV. Fig. 1.

a. The trunk of the common iliac artery of the right side.

b. The internal iliac artery.

q. The external iliac artery slit open for an inch and a half, showing the canal was still open, and exhibiting the internal coats of the artery shrivelled (chiefly, perhaps, from the action of the alcohol in which the preparation has been so long macerated) so as to present the appearance of a membranous cord running along the internal surface of the artery.

c. The point where the artery becomes ligamentous and impervious.

d. The point of ligature, marked by a pretty distinct notch, and about two inches from the bifurcation of the common iliac.

e. A portion of artery about an inch and half long, slit open to show the vessel was here pervious, and which was injected from branch to trunk by the epigastric artery.

f. The epigastric artery.

g. The *circumflexa ilii* artery, injected from the epigastric through the medium of the trunk of the external iliac, open at the point of origin of the two arteries.

h. The commencement of the sac, impervious, and hard as cartilage.

i. The termination of the sac.

k. The femoral artery, injected by

l. and *m*, Considerable branches, cut short, but anastomosing with the branches of the pelvic and gluteal arteries.

n. The shrivelled *profunda.*

o. Several branches originally rising from that portion of the femoral artery where the sac is situate,—now injected from branch to trunk by anastomoses with the arteries from the pelvis and hip.

p. A branch from the obturator artery, communicating with the epigastric, and by means of which both it and the *circumflexa ilii* were injected.

Plate IV. Fig. 2.

A. The trunk of the common iliac artery of left side slit open.

B. The internal iliac.

C. The external iliac slit open, with the internal coats shrivelled.
D. The point where the external iliac becomes impervious.
E. The point of ligature marked by a notch.
F. The external iliac slit open, showing that it was pervious at this point.
G. The epigastric.
H. The *circumflexa ilii*.
I. The sac hard as cartilage.
K. The femoral artery.
L. The point where the femoral artery ceases to be impervious.
M. The femoral artery slit open.
N. The *profunda* and its branches.

Art. X.—*Report of the Edinburgh Eye Infirmary, from the date of last Report, 20th November* 1834, *to 25th May* 1835. By Alexander Watson, Esq. F. R. C. S. E.

The objects of, and mode of conducting, this Institution, and a short account of the cases which had occurred, were already laid before the public in the Report published in this Journal in January last. The present Report will, therefore, only state very shortly the cases which have occurred during the last six months.

The number of cases which have been admitted into the Edinburgh Eye Infirmary from the 20th November 1834 to 25th May 1835 has been 276, making the total number admitted since the opening of the institution on 1st July 1834, 544. Of these admitted since 20th November, four have been admitted as in-patients; the rest were placed in the books as *out-patients*, some of whom were visited at their own dwellings. Many of the individuals were affected with diseases in both eyes, which, in some, were of a different nature; so that the number of cases of disease of the eye admitted into the institution was considerably greater than the number of patients above stated. The number of patients affected with each disease were as follow.

Ophthalmia tarsi,	27	Inflammation of cornea,	13
Inversion of eyelids,	2	Infl. of membrane of aqueous humour,	3
Tumours of eyelids,	9	Iritis,	9
Ulceration of eyelids,	2	Opacities and specks of cornea,	21
Ulceration of eyebrow,	1	Ulcers of cornea,	8
Painful nervous affection of eye,	1	Staphyloma of cornea,	1
Paralysis of muscles of eye,	5	Contracted and irregular pupils,	2
Fistula lacrymalis,	5	Amaurosis,	17
Injuries of eyeball from foreign bodies,	19	Cataract, single and double,	9
Inflammation of conjunctiva, (acute and chronic,)	75	Atrophy of eyeball,	2
Inflamm. of conjunctiva, (purulent,)	8		276
Strumous ophthalmia, (chiefly pustular,)	37		

The following list exhibits the number of cases in which operations have been performed for the removal of cataract, or the cure of other diseases of the eye and eye-lids.

	Operations for cataract.	*By extraction.*	*By needle.*
Penman,	1		1
Skinner,	1		1
Anderson,	1	1	
Brown,	1	1	
	— 4	— 2	— 2

Artificial pupil,	1
Fistula lacrymalis,	5
Tumours of eyelids,	6
Vascular specks,	2
Inversion of eyelids,	1
	15

Total No. of operations performed,	.	.	19
No. of cases admitted, .	.	276	
cured, .	191		
relieved, .	23		
incurable, .	20		
irregular in attendance,	6		
died, .	1		
still under treatment,	30		
operations recommended, .	5		
	276	276	

Remarks on some of the most important of the above cases.

1. *Inflammation of Conjunctiva,* (*acute and chronic.*)—This affection of the eye appears to me to afford strong evidence of what has been denied by many distinguished members of the profession, the existence of inflammation in an active and passive state. In an inflamed state of the conjunctival membrane of the eye many of the phenomena of inflammation are manifest, and the different symptoms and appearances which attend the two states above alluded to are so obvious and distinct, that every attentive and candid observer will be convinced of their existence. In the active or acute state of inflammation, there is heat, pain, scarlet redness, impaired function, intolerance of light, and copious lacrymation. In the chronic or passive state, there is crimson redness, with an absence of pain; there is neither heat nor intolerance of light, but there is commonly an increased secretion from the surface, either of mucus or muco-purulent fluid. These states often succeed each other in the same case, forming distinct stages of the complaint; and in others recurring alternately, the one relapsing into the other. The remedies required, too, are of an opposite character; for in the one, those commonly called antiphlogistic remedies are required; for the other, stimulants of various kinds. It is these changes to different and opposite states of the same disease which render discrimination so necessary in treating this and similar affections; for without this, the proper remedies cannot be applied. The remedies most successfully employed in these

affections were detailed in the former report, and, therefore, need not be repeated here.

Injuries of the Eye from Foreign Bodies.—One of the most remarkable effects of injury of the eye is that of immediate blindness from concussion of the nervous part of the eye. Two striking cases of this kind occurred at the Eye Infirmary, from the detonation of the percussion caps which have of late come into general use for the explosion of fire-arms. In both of these small portions of the percussion caps had struck the eyeball, but without seeming to have produced any very serious wound. Slight inflammation followed, but complete blindness was immediately produced, though the eye retained its natural appearance. These accidents show the great danger of using such caps, and that more effectual means should be employed to prevent it.

Another very remarkable effect of a wound of the eyeball is Atrophy of the globe. This probably takes place from the want of regeneration of the humours of the eye at the part wounded, in consequence of inflammation destroying its secreting powers. The wound may be slight, yet the same effect follows; even that produced by the introduction of a couching-needle is not unfrequently the cause of collapse or atrophy of the eye to a greater or less extent.

In one very remarkable case of collapse of the eye-ball resulting from an injury with a piece of glass seven years previously, an attack of inflammation came on, and the eye enlarged to a much greater size than the other, with great pain from the rapid effusion of fluid. When the inflammation abated, the eye again became somewhat collapsed. The inflammation of several different parts in the interior of the eye appears to occasion dropsy or dropsical effusion in the globe. In two preparations in my possession, of dropsy of the eye-ball from internal inflammation, the dropsical fluid is exterior to the retina in one, collapsing it into a cord in the centre of the eye; in the other, the fluid is within the retina, situated between it and the hyaloid membrane of the vitreous humour, which is pressed forwards.

Iritis.—Several severe cases of this disease occurred which had resisted the usual antiphlogistic remedies for a considerable length of time;—in one of them for three months. When they came under my care I considered further depletion, &c. necessary; but these remedies seemed to be of no avail till mercury was administered, and whenever the mouth became affected with it, the inflammation of the iris seemed to become arrested, and gradually subsided; vision became less and less obscured, and the patient recovered. In short, the remarks I have formerly made on this subject have been amply confirmed.

Cataract.—Only four cases of cataract have been operated on at the infirmary during the last six months. In two of these the cataract was extracted, in the other two it was broken up with the needle.

The case of the last patient, (Brown,) in whom extraction was performed, was a very remarkable one, and requires particular notice. He was a glass-blower, 54 years of age, corpulent, and bloated in appearance, and was much addicted to the immoderate use of spirits. In prospect of the operation, I put him on a regimen of preparation, advising him to abstain from strong liquors, to live moderately, take exercise, and a small quantity of Epsom salts every second morning. This I found afterwards had only been partially attended to. He underwent the operation on the 18th of February, and bore it well. On the day after, the 19th, he had no pain or complaint, but from his appearance I was afraid that *delirium tremens* was coming on. I regretted I was obliged to go to a considerable distance from town, but left him to the care of the house surgeon, Mr J. P. Rae, and my friend Dr Craigie, who visited him on the morning of the 21st. On the 20th, there was no pain or inflammation of eye, but slight symptoms of *delirium tremens* came on during the night. In the course of this afternoon, he became restless and unmanageable, then furiously maniacal, requiring restraint in bed. 21st, Passed a very restless night, and the scalp was hot, and covered with profuse perspiration; the pulse was from 120 to 130, and he was in a state of constant agitation, spoke incessantly, and in a state of furious delirium. There is no inflammation of eye. Bleeding by cupping from the nape of the neck, cold applications to the head, antimony and opium were the remedies administered; but he continued to become worse, and sunk into a low state, which was followed by death about five o'clock on the evening of the same day.

On *dissection*, the vessels of the brain were much injected with blood; copious sero-albuminous effusion was found beneath the arachnoid coat; and the ventricles were dilated, and contained a considerable quantity of serous fluid. The eye operated on presented a very favourable appearance.

The above proved a most unfortunate case, and had a very unexpected termination. The symptoms were those of high inflammation of the membranes of the brain,—a conclusion which was confirmed by dissection. In this case it turned out upon inquiry that the individual, who drank habitually, never to intoxication, but always to maintain himself under the influence of the unnatural *stimulus*, had laboured under repeated attacks of *delirium tremens*, with spectral illusions, and the other symptoms of deranged cerebro-meningeal circulation. Many such patients seem to become affected with the symptoms of *delirium tremens* from their wonted strong drink being suddenly withheld from them, and in other instances from its being taken to a slight extent more than usual. These cases generally prove very unmanageable, and too frequently fatal, whatever course of treatment is prescribed.

51, *Queen Street, Edinburgh, May* 1835.

ART. XI.—*Notice of Case of Fatal Suffocation in a Coal Miner from a fragment of Coal impacted in the Glottis.* By Dr JEFFRAY, Professor of Anatomy in the University of Glasgow.

THE following case is a remarkable example of the peculiar manner in which foreign bodies may slip into the *larynx* and produce almost immediate interruption to the alternate ingress and exit of air by the windpipe. The chief cause of the difficulty of expulsion in this case appears to have been the angular shape of the fragment, and the consequent adherence to the membrane of the *glottis*, inflammation of which appears to have taken place very rapidly and produced an increased secretion of mucus. The case is given in the words of Dr Jeffray.

"DEAR SIR,—I received your letter and that from Dr Marshall, but delayed answering them till I could send the sketch of the preparation, which I received only to day. The history I got with the case was very short.

A collier, working in a coal pit, and reclining much to one side, as they do in pooling or undermining, a part of the roof fell on him and turned him on his back, and while in this situation buried almost by what had fallen, a quantity of smaller pieces fell into his mouth as he was calling out for help. He thought he had got quit of the whole of them by the violent coughing that was excited.

The dyspnœa which threatened suffocation convinced the surgeon who had been called to see him that some of the pieces had got into the *larynx;* and, on introducing an instrument, his suspicions were confirmed. Having no proper instrument for extracting the piece, he proposed opening the *trachea;* but the bystanders, &c. would not allow that to be done, and the man died.

The drawing I send is pretty accurate,—only too much of the coal is seen. It was sunk deeper in the *glottis*, resting on the *rima.* Much thickened mucus was above it and around it, and had ultimately closed up the chinks at the irregular sides of the coal.—I am, Dear Sir, your obedient servant,

JAMES JEFFRAY."

Edinr. Med. & Surg. Jour.

Plate III, Vol. XLIV.

Dr MARSHALL'S CASE OF
NEPHRALGIA CALCULOSA.
page 66.

Fig. 1.

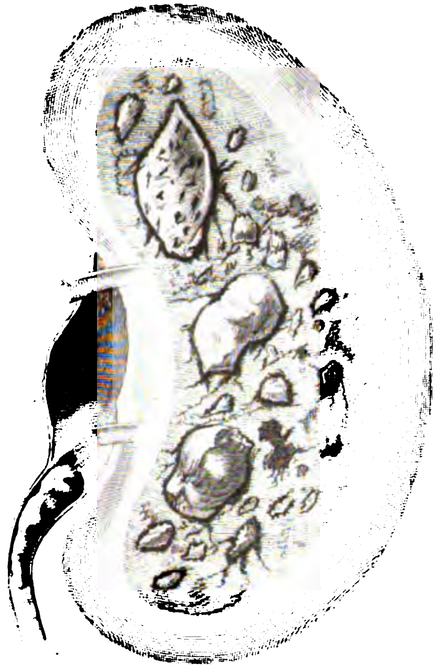
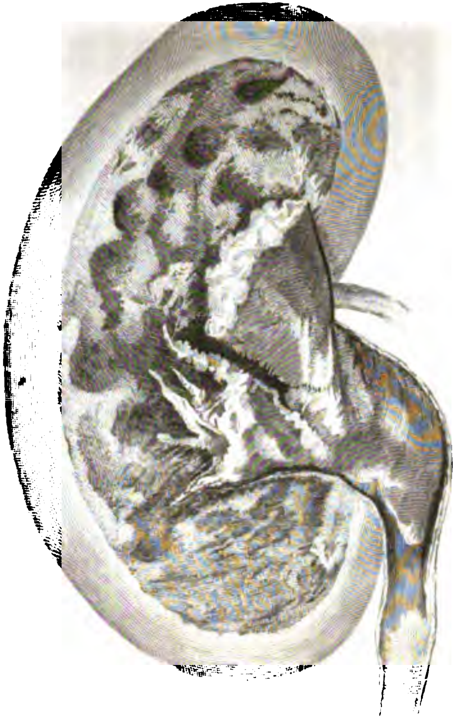
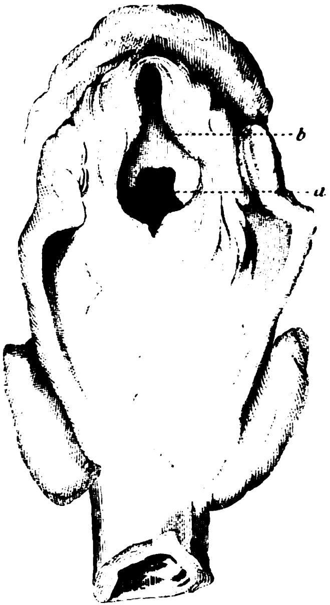


Fig. 2.



Dr JEFFRAY'S CASE.
page 108.



G. Aikman, Sc.

Figure 3 of Plate III. is a representation of the *larynx* and upper part of the *trachea.*

a. The fragment of coal sticking in the *glottis.*

Glasgow, September 11, 1834.

Art. XII.—*Case of Cyanosis—both Ventricles opened into the Aorta—Pulmonary Artery rudimentary and impervious.* By Robert Spittal, Fellow of the Royal College of Physicians, Edinburgh.

In the month of March last, M. W., aged 22, who was at the time, and had been in confinement in the jail of this city for upwards of two months, gave birth to a female child, apparently at the full period. There was nothing anomalous in the formation of the infant externally, except that the integuments were observed to be constantly of a bluish purple colour, especially over the extremities. The hue of the skin varied in intensity, being sometimes much darker than at others. The umbilical chord separated, and the consequent sore healed quickly. The child took its proper nourishment, and for the first few days of its existence appeared to be doing well.

This state did not continue, however. The infant began to refuse its food, and became subject to frequent attacks of syncope, several of these occasionally taking place in the course of twenty-four hours, as was the case immediately before its death, and in one of which it was reported to have expired, having lived only twenty-three days.

Suspecting some malformation of the organs of circulation, auscultation was occasionally had recourse to, and the action of the heart was perceived loud and distinct, but perfectly normal in every respect.

On examination thirty hours after death, the integuments were found to have preserved their ordinary bluish purple colour, giving the body very much the aspect of one who had sunk in the collapse of cholera. The *thorax* and *abdomen* were examined, but nothing anomalous or diseased was observed, except in the former, in which the heart and great vessels arising from it presented the following unusual formations, some of which are represented of their natural size in the annexed drawing.

The heart was about the usual size. The walls of the right ventricle were three-sixteenths of an inch, those of the left one-fourth of an inch in thickness. The cavity of the former was greatly larger than that of the latter. The tricuspid and bicuspid valves were of their usual structure.

A slight deficiency existed in the upper part of the *septum* of the ventricles. Immediately above this the aorta arose; it was larger than ordinary as far as the *ductus arteriosus,*—being an inch and a quarter in circumference, but beyond this point the vessel was not examined. The semilunar valves of the aorta were of the usual formation.

The rudiments of a pulmonary artery arose from the ordinary site, at the base of the right ventricle close to the aorta, by a very small vessel of the usual structure, but capable of admitting only a very small probe, as may be seen in the drawing, and quite impervious at its origin close to the muscular substance of the heart. Proceeding upwards for a short distance, the vessel became rather abruptly increased in breadth, and, immediately beyond the *ductus arteriosus,* divided into its right and left pulmonary branches. The *ductus arteriosus* was open, and admitted a large probe freely. The auricles appeared to possess their ordinary formation, except that the *foramen ovale* was sufficiently open to have nearly admitted a goose quill.

In this case, then, we have seen that both ventricles communicated, not only with one another, but likewise directly with the aorta, and, as a consequence of this malformation, a mixture of black and red blood of course must have passed through the aorta. It is also evident, that, owing to the imperfection of the pulmonary artery, the pulmonary circulation must have taken place only through the *ductus arteriosus,* which, from its small size, was probably quite inadequate to admit of the usual supply of blood to the lungs.

It was stated that auscultation revealed nothing unusual in the action of the heart, and there is nothing in the state of the parts which would lead us to expect any abnormal indications in such cases; for, although there was considerable alteration in the openings, still there was no narrowing of them, or other change usually coexistent with, or capable of giving rise to, any morbid or abnormal indication appreciable by auscultation.

Explanation of the Drawing. Plate V. Fig. 1.

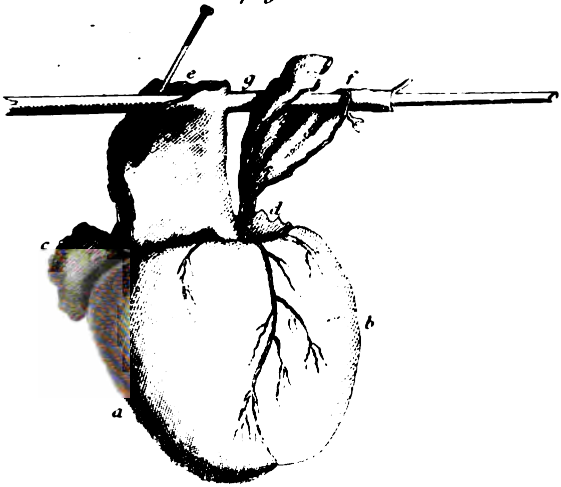
a.	The right ventricle.	*e.*	The aorta.
b.	The left ventricle.	*f.*	The pulmonary artery laid open.
c.	The right auricle.	*g.*	The *ductus arteriosus.*
d.	The left auricle.		

Art. XIII.—*A Case of Uterine Polypus removed by the Ligature, in which dilatation of the Os Uteri was produced by the administration of the Lobèlia Inflata.* By R. W. Chapman, Esq. M. R. C. S., &c.

The following case illustrates the practicability and safety of removing *polypi* growing from the *fundus* of the *uterus,* and de-

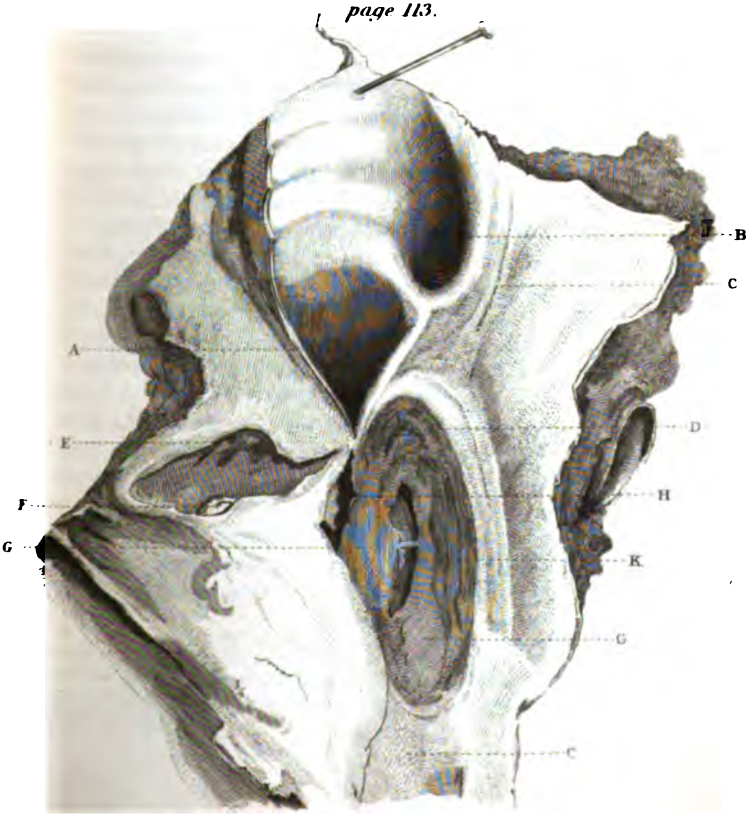
Edinr Med. & Surg. Jour. *Dr SPITTAL'S CASE.* *Plate V. Vol. XLIV.*

page 109.



SKETCH OF MORBID APPEARANCES IN Mr SYME'S FIRST CASE.

page 113.



veloping themselves in its interior, being incapable of overcoming the resistance which the neck of that organ occasionally opposes to their exit into the *vagina;* and perhaps it may induce practitioners, on reflecting upon the excruciating pains, the profuse hemorrhagic discharges, and the extreme debility frequently produced by uterine *polypi*, to think it preferable to have recourse to their removal, whilst they are yet in their incipient state, and confined within the cavity of the *uterus*, than to wait for months, until they are expelled into the *vagina*, protracting the painful and miserable condition of the patient, until an irrecoverably debilitated state of the constitution is induced.

The subject of this case is named Alice Longhorn, a dressmaker, aged 32. She had experienced for about eight years irregularities in the menstrual discharge, frequently profuse, and accompanied with violent pains, resembling those of parturition, in the hypogastric region. About the nature of her complaint she consulted several medical practitioners, who treated it as a case of *menorrhagia*, and consequently no particular benefit was derived from their prescriptions. About two years ago she applied for my opinion. After relating the history and symptoms of her case, the probability of there being a tumour in the womb was suggested to her, and she was advised to submit to an examination *per vaginam.* On introducing the finger as far as, and within, the *os uteri*, the extremity of a smooth and solid tumour was perceptible to the touch, and the nature of the case was sufficiently obvious. In order to restrain the hemorrhages, and mitigate pain, the horizontal position, mineral acids, and opium, were had recourse to; and the patient was advised to wait until the polypus should descend into the *vagina.* For the two years during which I attended her, I have frequently witnessed her labouring under violent and continued pains, so as to deprive her of sleep for several nights in succession; and in a state of *anæmia*, owing to excessive hemorrhages proceeding from the vessels of the *polypus* or of the *uterus*,* which frequently rendered it difficult to restore her. Worn out with pain and feebleness, and being unable to follow her occupation, she prevailed upon me to attempt the removal of the tumour, though still confined within the body of the *uterus.* The patient was placed in a hot bath, so as to produce syncope, and a dose of the *Secale cornutum* was administered to her. As soon as she complained of the tumour producing a sensation of pressing down, the dilatation of the *os uteri* was attempted by means of the finger; the attempt, however, was not successful; but, on the contrary, whenever the *os uteri* was irritated by the dilating movement of the finger, it contracted so violently, as to render it impossible to proceed further.

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* Perhaps it may not be certain whether the hemorrhagic discharges proceed from the polypus or from the vessels of the uterus. Richerand, in his Nosographie Chirurgicale, when treating upon polypi of the uterus, states, "Comme la substance du polype saigne facilement, la femme devient sujéte à des pertes plus au moins abondantes et irrégulières."

Some time afterwards, I consulted with Mr Law, an experienced surgeon residing in Penrith, who advised me to try the effects of the *Secale cornutum* in small and repeated doses, and to endeavour to dilate the *os uteri* for a succession of days. This plan was adopted; but, like the former attempt, it proved unsuccessful; for the *os uteri* became irresistibly contracted whenever an attempt was made to dilate it.

It suddenly occurred to me that the trial of the *Lobelia inflata* might prove efficacious in overcoming the resisting contraction of the *os uteri.* I gave it to the patient in repeated doses, so as to keep up a slight degree of nausea; and after she had taken it for two successive days, on introducing my finger, I was astonished to discover the *os uteri* so completely dilated as to enable me to introduce with facility two fingers into the cavity of the *uterus*, and to examine the situation and magnitude of the *polypus* with a tolerable degree of exactness.

There was now no difficulty to oppose the introduction of the double *cannula*, which was conveyed along my fore-finger to the base of the polypus; one of the *cannulæ* was then carefully pushed onwards as far as its neck, and maintained in that position until the other *cannula* was directed round the tumour and brought in apposition with the former; the two *cannulæ* were then connected together by means of the rings at the extremity of the rod, and the cord tightened and fastened in the usual manner. The moment the ligature, which encircled the neck of the polypus, was drawn tight, the latter swelled to the size of a child's head, and immediately descended into the vagina.

The patient experienced much pain, which was evidently caused by the expellent action of the uterus; for the tumour appeared altogether insensible, as the constriction of the cord did not seem to produce any painful sensation. During the first four days after the operation, whenever the ligature was tightened, a quantity of greenish coloured fluid, at one time exceeding a pint, escaped from the vagina; and on the fifth day the tumour separated, and was easily brought away. It presented a fleshy appearance, and was surrounded by a flocculent membrane, and measured about eight inches in length, the diameter of its neck being an inch and a quarter; but it was so much softened by the process of decomposition that I could not examine the exact nature of its structure with any degree of accuracy.

No untoward symptom in the course of this period presented itself, nor was there any sanguineous discharge from the uterus.

The patient was immediately put upon a generous diet, with the use of tonics. About ten days after the removal of the tumour, she had her menstrual discharge, which continued for two days in a natural state as to quantity and colour, without experiencing any pain; and, although a month has only elapsed since the operation, she has so far recovered as to be able to take exercise in the open air.

Appleby, Westmoreland, May 14, 1835.

ART. XIV.—*Cases of Organic Disease of the Digestive Organs, with Dissections.* By JAMES SYM, M. D., Ayr.

CASE I. *Calcareous and melanotic deposits amongst the Bronchial Glands; ulceration of the œsophagus, and perforations of the pericardium and left Bronchus, with dysphagia and pulmonary catarrh.*—A gentleman in his 43d year, who had been subject to stomach complaints, but otherwise healthy, began in autumn 1834 to experience tightness across the chest, and occasional difficulty in swallowing solid food. He generally referred the difficulty to the top of the sternum, though sometimes he felt as if it arose from flatulence at the cardia; it was by no means constant, but occurred from time to time in severe fits when he masticated carelessly; and it was accompanied by a sensation of hardness in the gullet. He had uneasiness after meals from flatulent distension of the stomach, and his stools were dark-coloured, till they improved under a few doses of the blue pill. These symptoms continued during winter, and at the beginning of February 1835, he was seized with pain between his shoulders, a pretty severe cough, and a sour-tasted expectoration. In the course of a few days, the pain abated, but the cough increased, and the matter expectorated became profuse, yellow, viscid, excessively fetid, heavier than water, and mixed with blood. He now fell off rapidly in flesh and strength, and perspired during night. The chest, however, sounded well on percussion, there was no cavernous rhonchus or pectoriloquy, and his pulse was little accelerated. On the 14th of February, he complained of pain in the region of the heart, which was removed on the 22d by a blister, after embrocations and a sinapism had been applied with only partial relief.

The cough and expectoration had been gradually abating for some time, whilst the dysphagia continued rather to increase, when, on March 5, he spit up a considerable quantity of fluid blood, light coloured, not at all frothy, and which he felt assured came from a tender place in his throat. It was followed by copious expectoration of viscid mucus, brought up by a combined effort of coughing, hawking, and retching, and attended with severe spasmodic pain at the point of the sternum. He attempted to swallow a few drops of a solution of muriate of morphia; but this and every other liquid immediately increased the cough to an excessive degree. On the 6th he swallowed pretty easily a little panado. On the 7th he attempted to take a dose of rhubarb and magnesia in water, which again excited a most violent paroxysm of spasmodic cough, and he continued for several minutes to cough up the medicine in a frothy state. This convinced me that an aperture existed between the gullet and air passages. His voice was not affected, except that he spoke in an under tone from weakness, and his cough was not husky. There was no tenderness on pressing upon the larynx or trachea, nor tumour in any part of the neck, and the internal fauces appeared healthy, but there was slight relaxation of the uvula. He still pointed to the upper part of the sternum at its left side as the seat of his disease, and said he felt as if there was a button pressing within it. His strength was now greatly exhausted, and his pulse sometimes sunk under fifty beats in the minute, when Dr W. Whiteside and I advised that he should abandon for some time all attempts at swallowing food, and be supported entirely by nutritive glysters. From the 9th to the 16th, he had merely sipped each evening a small quantity of gruel containing muriate of morphia. On the 16th he began to take a little calf foot jelly, which caused less irritation than formerly, although Mr Gibson,* who attended him very constantly at this period, could generally detect a portion of the jelly in the expectoration. On the 25th, his bowels became irritable, and *scybala* were felt through the parietes of the abdomen, for which he had castor oil and a purgative enema. These produced a considerable discharge of the *scybala* without checking the diarrhœa; and the nutritive glysters, notwithstanding the addition of laudanum to them, were not retained long enough to yield much nourishment. His strength declined rapidly; cordials were had recourse to, perhaps rather too freely, and suddenly on the 29th large quantities of blood were discharged from his tongue, which, together with the mucous membrane of the mouth and fauces, was very tender and red. These symptoms, as well as the diarrhœa, soon subsided, but he never attempted to swallow again, and he died extremely emaciated on the 7th April.

April 9th—*Inspection thirty-eight hours after Death.*—The lungs collapsed naturally, were free from adhesions, of a healthy colour, and in every part soft and compressible, except at their roots, where hard tumours were felt amongst the *bronchi*. The *larynx*, *trachea*, and *œsophagus*, when laid open, appeared sound till we reached the bronchial tubes. In the posterior wall of the left *bronchus* there was a chink nearly two-thirds of an inch long, and one-fourth of an inch wide, communicating directly with the *æsophagus*. The bronchial tubes generally were filled with thick yellow matter, similar to what had been expectorated. The aperture from the *bronchus* led into the centre of a large ulcer in the *æsophagus*, two inches long, and occupying three-fourths of its internal calibre. The surface of the ulcer was studded with patches of melanosis and a number of small calcareous concretions, some loose, and others impacted in its substance. The diseased portion of the *æsophagus* was not scirrhous, but considerable induration existed where it was in contact with the *pericardium*, to which it firmly adhered; and from this part of the ulcer a second aperture of an oblong form communicated with the cavity of the *pericardium*; it was fully two-thirds of an inch long, and half as wide when distended, but when left unstretched, it formed a narrow slit; its margins were smooth, even, and firm. The inner surface of the *pericardium* was somewhat too vascular, but no products of inflammation were observed. There was no proper stricture of the *æsophagus*, though the finger met with some resistance to its passage through the ulcerated portion, at the situation of the hard tumours already mentioned. On cutting down upon these, they were found to consist of calcareous matter, and some of them were nearly an inch in length, angular, and very irregular, being composed of several small concretions adhering together. They were mingled with masses of melanosis, and the small concretions and melanotic matter on the ulcer seemed to branch off from this cluster. The lower portion of the *æsophagus* and the *cardia* were sound, and the stomach presented no organic disease, although its mucous membrane was thickly specked in some parts with small bloody dots.—(See Plate V. Fig. 2.)

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* I am indebted to Mr Gibson for the accompanying sketch.

CASE II.—*Cancer of the cardia, with dysphagia, severe intercostal neuralgia, and salivary discharge.*—A countryman, 60 years of age, who indulged too freely in whisky on market days, began, in the summer of 1823, to complain of acute pain in the hepatic region; it was worst at first towards the epigastrium; but, after a course of mercury, it abated there, and became much more severe nearly opposite to its original situation, at the right side of the spine, where he could not bear the slightest superficial touch without shrinking. He had also pain in the right shoulder; the urine was high-coloured, and the stools dark before using the mercury, after which they became natural. For some time the disease was regarded as hepatitis; but its obstinate resistance to remedies, and the extreme superficial tenderness of the ribs, extending also to the vertebræ, made me subsequently suspect an affection of the spine. At length difficulty of swallowing supervened; he became subject to a constant profuse discharge of a ropy fluid from the *fauces*, the tongue became tender, the articulation indistinct; and for some weeks before his death he rejected his food before it had time to enter his stomach. I wished to support his strength by nutritive glysters, but he pertinaceously refused to receive them, and he died of inanition on the 2d January 1824. Anodynes and warm baths were the only remedies from which he derived any relief.

January 3, 1824.—*Inspection.*—The liver, kidneys, intestinal canal, lungs, and spine, were healthy. The cardiac orifice of the stomach contained an ulcer as large as a crown piece, seated in the centre of an extensive mass of *scirrhus*.

CASE III.—*Cancer of the cardia, with dysphagia, and salivary discharge, the symptoms being remarkably alleviated for several months before death.*—An old man, of temperate habits, consulted me, January 22, 1825, on account of *dysphagia*, with which he had been affected for nearly six months. Whatever food he took, however well masticated, was in part rejected a few minutes after swallowing it, sometimes easily, at others with a pretty violent spasmodic effort, though without distinct retching. He constantly forced up large quantities of tough saliva or mucus from the fauces, and had a good deal of flatulent eructation. Latterly, he had felt slight occasional uneasiness in the back, opposite the cardia, and around the left hypochondrium. He was never free from the dysphagia, but it varied in its severity; and his flesh and strength had fallen off so much from defective nourishment, that when I saw him first, he was confined mostly to bed. I advised him to have two nutritive glysters daily, to restrict his diet to very small quantities of milk, arrow-root, and other soft substances, and to apply a blister to the epigastrium. Even a portion of the milk was rejected, but he felt refreshed by the glysters, which were afterwards increased to four daily, and in the beginning of February an eschar was formed on the epigastrium with caustic potass. The dysphagia gradually diminished; by the 13th March he could swallow a soft egg, and drink a little porter, which were retained; and his strength increased so much, that he only required to take one or two of the glysters each day. There was now perceptible in the epigastrium a visible pulsation, and some degree of deep-seated hardness could be felt under the ensiform cartilage. The pulse intermitted about once in the half minute. Towards the end of April the issue healed up, the pulse became more irregular, the feet œdematous, and the dysphagia increased. His tongue assumed a smooth polished appearance, and his skin became excessively dry and harsh. He was put on a course of antimonial wine and diuretics, and a new eschar was formed, after which the tongue and skin returned to their healthy state, the œdema disappeared, and the dysphagia again yielded; but he observed, that whenever the issue was allowed to dry up, the dysphagia increased. He continued to recover his strength and flesh during the summer, and he was able to walk about and visit his tan-works, when, in August, he was seized with dysentery, which was then epidemic, and he died on the 8th September, without any aggravation of the dysphagia.

Sept. 9. *Inspection.*—The cardia was converted into a scirrhous tumour, about the size of a hen's egg, adhering to the neighbouring parts,—the adjoining portion of the left lung being hepatized to a very small extent. On opening the stomach, the cardiac orifice was found so contracted, that it only permitted the point of the finger to enter, and the internal surface of the diseased mass presented a blackish-coloured ulcer, having a soft irregular base. The tumour, when cut into, had the usual appearance of scirrhus. The rest of the stomach was perfectly healthy. The intestines were lined with a coat of viscid mucus, but no ulcers were detected in them. The aorta was much enlarged, both in its arch and in its descent through the thorax. Large spiculæ of bone were found behind its inner coat; and the semilunar valves, as well as the commencement of the coronary arteries, were completely ossified.

CASE IV.—*Extensive ulcer destroying the cardiac extremity of the stomach, and adhesions of the diaphragm, omentum, and spleen around the aperture, with painful undefined tumour in left epigastric region, hæmatemesis, and purging of blood.*—A labourer, 50 years of age, had been subject from the beginning of January to burning pain and distension of stomach, flatulence, frequent eructations of insipid fluid, and pain about his heart, and in his loins. When I saw him at the end of February, his abdomen was full, tender, and tympanitic, and there was an indistinct hardness on the left side of the epigastrium, which was tender; pulse 96; tongue clean; bowels slow. On March 14th he vomited blood, and soon after he began to pass blood by stool, which continued to be discharged in considerable quantity for several days. The pain and hardness increased; his strength fell off rapidly; he became much distressed on the 25th, and felt as if something had given way within him, and he died next day.

March 27. *Inspection.*—The mucous membrane of the lower part of the œsophagus was rough and diseased. A large portion of the cardiac extremity of the stomach was destroyed by ulceration, and its place supplied, so as to prevent the escape of its contents, by adhesions of the omentum, which was thickened and indurated, of the diaphragm, and of the spleen, the greater part of which projected within the cavity of the stomach,—the contained portion being very much softened. Several pounds of sero-purulent matter in the cavity of the abdomen, and serum in the left side of the *thorax*.

CASE V.—*Contraction, thickening, and ulceration of stomach, with pulsating tumour in umbilical region, and hæmatemesis.*—An old man, who had been a carpet-weaver, and of sober habits, began to complain in July 1829 of costiveness and pain in his bowels; he had also pain in the back; and his appetite and strength fell off. In August a hard, knobbed, pulsating, moveable tumour was detected close by the navel towards the left hypochondrium, and *scybala* were felt through the parietes in the bowels. Purgatives and injections removed these in large quantities; but he was obliged, on account of pain in the tumour and in his back, to have recourse to anodyne glysters, and the costiveness constantly returned. On the 15th and 19th October, he had attacks of hæmatemesis; his strength and flesh declined rapidly; his mouth became aphthous; and he died on the 28th.

October 29. *Inspection.*—The tumour felt in the abdomen was the stomach, which lay much lower than usual, was contracted in size, its coats an inch in thickness, cutting smooth, not very hard, of a uniform grayish colour, and its inner surface ulcerated and full of tuberosities. The large intestines contained great quantities of *scybala*.

CASE VI.—*Contraction, thickening, and ulceration of stomach; with inky tinge of its mucous coat, and of the peritoneum, from swallowing Indigo-dye mixture.*—An old carpenter, who was previously in apparent good health, when repairing the roof of a dye-house, on 7th November 1830, fell into a vat, and was immersed for a short time over his head in its contents, which consisted of 4 parts Indigo, 10 sulphate of iron, and 12 lime, in 1000 parts of water. He seemed to have swallowed a considerable quantity of this liquid, and he purged blackish matter for several days afterwards. His health suffered severely; his voice became hoarse; he had a cough; lay constantly in bed from weakness; and after a fortnight was seized with pain in his left side. The pain was relieved by bleeding and a blister; but his strength still sunk; he felt uneasiness and great oppression about the præcordia; had a return of the pain in his side on the 1st December, and he died on the following day.

December 4. *Inspection.*—The parietal and intestinal peritoneum was beset with inky spots, which seemed to reside in loose fasciculi at the surface of that membrane, and from which a blackish fluid exuded on pressing them with the scalpel. The mesentery was particularly impregnated with this dye, where it formed long streaks in the direction of the lacteals; and the lesser omentum, between the stomach and liver, was deeply tinged. The stomach was contracted, and much thickened; the thickening was in its mucous coat, which also was dyed bluish black, and studded with small tumours, the size of peas, beneath its surface. Near the pylorus there was an ulcer as large as a dollar, having an irregular fungous surface, and thick elevated margins, not scirrhous. The stomach was lined with adhesive mucus. The liver, as well as the mucous membrane of the small intestines, seemed healthy. There was none of the blackish matter in the chest, but the left lung presented marks of recent inflammation on its pleura, and there was an ecchymosed spot amongst the muscles over the left false ribs. The heart was loaded with fat, its muscles thin, and easily torn.

CASE VII.—*Thickening, ulcer, and perforation, at the pyloric extremity of stomach; with pulsating tumour in umbilical and right epigastric regions, and discharge of ammoniaco-magnesian phosphate from bowels.*—A gentleman, about 40 years of age, of a literary occupation, who had been long dyspeptic, and in the habit of using a great deal of medicine to obviate costiveness, became subject at the end of autumn 1831 to an irritable state of his bowels, and uneasiness of stomach after meals. This uneasiness he found by experience was relieved by restricting his diet to milk and farinaceous substances. His pulse sometimes intermitted, though generally it was regular; his stools were dark-coloured; his urine deposited a whitish sediment; his sight became weak; he was subject to headach; he looked sallow; and his strength and flesh progressively declined. I saw him first on 5th May 1832, and, on examination, I found that the space between the navel and right false ribs was hard and tender; that it pulsated, and, on mediate percussion, the tympanitic sound was much duller than over the rest of the bowels, though not altogether extinguished. By using lime-water, and applying leeches and blisters to the epigastrium, the tenderness and pain after meals greatly diminished; but his strength and flesh still fell off,—the quantity of food he was able to take being insufficient for his support. Drs P. and W. Whiteside and I now prescribed nutritive glysters to sustain his strength; and a seton was inserted over the tumour, which had become much more definite, and pulsated more conspicuously, the pulsation being quite perpendicular, without any lateral distension, and without aneurismal sound. On 10th June, it was ascertained that a sandy sediment existed in very large quantity in his stools; and on examination it was found to be of a fawn colour, gritty, sparkling, and crystalline, and it answered to the chemical tests of the phosphate of ammonia and magnesia. After suspending the use of the lime-water, and of magnesia,* which he occasionally took for heartburn, the sediment disappeared, and the stools, when largely diluted, were found to redden litmus paper; but when neutralised by ammonia, a copious cloud of the ammoniaco-magnesian phosphate was precipitated. On having again recourse to the lime-water and magnesia the sand reappeared. The stools were always of a dark colour, and the water in which they were dissolved became reddish, as if from blood. The tenderness, debility, and emaciation, increased; his mouth became aphthous; and on 22d July, after incautiously eating several spoonfuls of rice at a single meal, he was seized with agonizing pain at the stomach, which was excessively aggravated by motion;—the lower part of the abdomen became full and tender; the pulse was 80, soft and regular; the bowels open, and there was no vomiting. I was convinced that perforation of the stomach had now taken place, and I announced to the family this opinion, and that he would not probably survive longer than forty-eight hours. He continued to linger on in extreme distress for a week after this accident. His bowels became loaded with *scybala;* injections could not be retained from relaxation of the sphincter; and we were obliged to relieve his sufferings by evacuating the rectum mechanically, as the accumulated *scybala* caused extreme irritation. Diarrhœa occurred on the evening of the 28th, and he died next morning.

Inspection 28 hours after death. On opening the abdomen the great curvature of the stomach presented a round perforation, about half an inch in diameter, which seemed to have been filled by a small plug of soft lymph observed on the corresponding point of the muscular peritoneum; the effused lymph likewise produced slight adhesions of the stomach and liver to the parietes and to each other; but it did not extend over the rest of the intestines. The perforation proceeded from the centre of a large ulcer surrounding the pyloric orifice of the stomach, and extending from thence along half its great curvature. Its border was prominent, hard, abrupt, and slightly reverted. The whole base of the ulcer was thickened and indurated, and it was easily separated from the muscular coat, except near the perforation, where the coats adhered firmly together and became thin. The ulcer was of the same pale colour with the rest of the mucous membrane, and its base when intersected presented white bands. The mucous membrane of the duodenum was covered with arborescent red vessels. Between the concave surface of the liver and the pylorus a gland was found the size of a pullet's egg, and reduced to its capsule filled with soft matter; and here was a smaller one of the same description on the opposite side of the pylorus. There was a small soft tubercle on the concave surface of the liver, which was otherwise sound, as were the other viscera both of the abdomen and thorax.

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* There was no lime in the sand, and he very seldom took the magnesia.

Case VIII.—*Thickening, ulcer, and perforation at the pyloric extremity of stomach, with pulsating moveable tumour in left epigastric region, and vomiting.*—A victualler, 50 years of age, who had been long epileptic, became subject at the beginning of 1830 to severe attacks of pain in the stomach. On 23d July I found a pulsating tumour in the left side of the epigastrium; it was remarkably moveable, tender, felt as if close to the parietes, and did not yield the aneurismal sound. I regulated his diet, and inserted a seton over the tumour, and for some days both the pain and pulsation were slighter; but on August 4, he began to vomit black matter, diffused in a tenacious fluid, and afterwards it appeared to be mixed with pus. By the beginning of September, his stomach could not retain any kind of food, and he drank whey, as his only nourishment. He became in consequence exceedingly weak; the tongue became aphthous, his stomach acutely tender on pressure and on moving his body, and the tumour pulsated less forcibly, and was less prominent. I now advised that he should have recourse to nutritive glysters, which were continued for some time; but his medical attendant, suspecting from the extreme mobility of the tumour, that it might be an intestinal concretion, with the view of expelling it, administered a small purgative which acted severely, and induced diarrhœa. The glysters could no longer be used, and he died of exhaustion, on the 28th September.

September 29. *Inspection.* On opening the abdomen there appeared in the epigastrium, a round, lumpy, very moveable tumour, consisting of the anterior aspect of the pyloric half of the stomach. The coats of the diseased portion were exceedingly thick, and the inner surface presented a large ulcer, with a tuberculated surface, and hard prominent margins. The pyloric orifice was quite pervious. At one point the ulcer had made a small perforation through the coats of the stomach.

Case IX.—*Thickening of the cœcum, stricture of the rectum, and tubercular disease of the peritoneum; with violent attacks of pain in the bowels, and ultimately obstruction.*—A middle aged china-merchant, of pale complexion, and who bent forward considerably in walking, had been long subject to stomach complaints, and latterly to frequent severe cramps in the stomach and bowels. These were generally accompanied by fulness in the seat of the cœcum, which gradually subsided after the attacks. He had one of these attacks at the beginning of February 1826, more severe than any of the preceding, and the tumour was also larger. The cramp continued with occasional remissions for two days; it was attended with shiverings, a quick pulse, and dry tongue; and the bowels continued tender, and griped for some days afterwards. On February 9, I found that the pain was concentrated in the tumour, which was immoveable, and occupied the space between the spine of the right ilium, and the *linea alba*. His bowels were habitually costive, his stools not compressed, his back pained, and micturition somewhat difficult. On the 12th, the tumour had become less tender and smaller, and when compressed air escaped from it, leaving still a good deal of induration. The treatment had consisted in general blood-letting and baths at the commencement, followed by the frequent application of leeches, fomentations, and laxatives; and on the 14th a mercurial plaster was applied over the tumour, and a Plummer's pill ordered to be taken every night.

By the 3d March, the tumour was reduced to a very small knot under the margin of the ilium; and from that time he continued free from attacks of cramp and in very good health, till the end of 1830, when he was seized with dysentery. On recovering from this, he exposed himself to cold, and was seized with severe attacks of pain, not in the former situation, but half way between the sternum and navel, occurring every fifteen or twenty minutes, and going off with a feeling of flatus, dispersing itself through the bowels. During the pain the part was very tender to the touch, and the intestines formed tense ridges under the parietes. Purgatives caused severe suffering, his stools were flattened, his pulse sharp, and his tongue dry and brown, in the middle. On January 28,. the rectum was examined by his medical attendant, who found a tumour from its anterior wall encroaching upon it so as to prevent injections from passing up. He had no feculent evacuations for some time, his stools consisting of a little bloody mucus, and he was obliged to have recourse to anodynes for temporary relief. I advised that the feculent matter in the large intestines should be dissolved by warm water injections administered through a long catheter; but this was never carried into effect, and he died on the 15th February.

February 16. *Inspection.*—The peritoneum of the parietes, diaphragm, and intestines was thickly studded with white spots about one-eighth of an inch in diameter, and slightly elevated. Some adhesions among the convolutions. The omentum was tightly braced down to the pelvis at three points, by which it was kept very tense. One of the adhesions was at the symphysis, another deep in the pelvis, where the peritoneum is reflected from the bladder to the rectum, and the third near the right external ring; all exceedingly firm like tendons, and each about the breadth of a finger. In the right flank also the omentum adhered for several inches to the peritoneum, binding down the colon. The bowels, both large and small, were greatly distended with air. About a finger length from the anus there was a firm narrow stricture of the rectum, the anterior aspect of which was very thick and hard, without the proper character of scirrhus. Above the stricture the gut was obstructed by several hard, smooth, perfectly globular *scybala*, and the rest of the rectum, and whole of the colon and cœcum contained massy *fæces* in very large quantity. The coats of the cœcum were very much thickened, and adhered firmly to the omentum. The ileo-cæcal valve was sound.

Case X.—*Hydatids of the liver, tubercular deposit in the omenta, and granular tubercles of the peritoneum; with tumour in right epigastric region, and pain of stomach and bowels.*—A woman, about 50 years of age, consulted me in April 1826 on account of pain in the stomach and bowels, dyspepsia, and costiveness, to which she had been more or less subject for three years. I found the upper part of her abdomen tender, full, and tense, and that it contained a tumour having a distinct boundary near the navel, and extending into the epigastrium and right hypochondrium. She could not lie on either side, had no appetite for food, was very pale, and greatly debilitated. After using a short course of mercury, the general tension and fulness subsided considerably; and on a second examination, I found that the tumour extended about three inches below the margin of the false ribs, and could be traced nearly to the *scrobiculus cordis*. The lower portion of the tumour when pressed had the feeling of *emphysema*, something like air appearing to pass under the hand from one part to another, and the upper part felt as if it were filled with matter. On 6th May, I found her insensible, and obviously dying. On placing my hand on the tumour, I could not now perceive any fluctuation in it, and the tension was greatly diminished. She died next day. She had no pulmonary symptoms.

May 8. *Inspection.*—The parietes of the abdomen adhered to the contained parts, from which they were detached pretty readily by the hand, and the contiguous viscera adhered more loosely to each other. The peritoneum, both muscular and intestinal, was vascular, and covered with a thin adventitious membrane, which formed the adhesions, and beneath which small whitish grains were dispersed throughout its whole extent. Between the folds of the great omentum, a large deposit of firm adventitious matter existed, presenting a thick abrupt margin towards the right hypochondrium, and becoming very thin after passing the navel. A smaller deposit of a similar substance was found in the little omentum. The *pylorus*, and part of the duodenum and colon, adhered firmly to the hepatic peritoneum, which was here expanded over a large whitish ligamentous sac, about a line in thickness, interposed between that membrane and the liver. On opening this sac, it was found to be filled with hydatids, varying from the size of a pea to that of a filbert. They were semitransparent, of a whitish colour, as if they had been dipped in milk, perfectly globular, rolling about without the slightest adhesion to the sac, very tense, and, when punctured, ejecting to a great distance a limpid fluid, which showed a high degree of contractility. The sac also contained a large mass of softened half-disorganized skins of hydatids, which had burst. The mucous membrane of the stomach was somewhat softer and more vascular than in health. The other organs of the abdomen and pelvis were sound.

CASE XI.—*Tubercles of the peritoneum, pleuræ, and lungs, and large tubercular deposit between the stomach and diaphragm; with profuse salivation, and ultimately cough and purulent expectoration.*—A married woman, 40 years of age, whose constitution had been impaired by nursing other children after weaning her own, and who had on different occasions become hectic, and been threatened with consumption, began to fall very much off in her general health at the end of 1825. She became feeble, hectic, and subject to diarrhœa; had a constant profuse discharge of an insipid ropy fluid from the *fauces* or stomach, with occasional vomiting, and uneasiness in the epigastrium, and for some time her tongue became raw, and the feeling of rawness extended along the *œsophagus*. There was no tumour discernible in any part of the abdomen, she had no pain in the chest, and she had no cough till the 12th May 1826, when she had a sudden severe fit of coughing and retching, with purulent expectoration. The cough and expectoration continued till death, which took place on the 21st May.

Inspection forty hours after death.—The parietes of the abdomen adhered very firmly to all the contained parts, and the convolutions of the intestines less firmly to each other. The peritoneum of the parietes, diaphragm, and viscera, was thickly studded over with tubercles, varying in size from that of a barley-corn to a field bean, firm, of a straw colour, and having their bases connected together by a strong transparent adventitious membrane, by which the adjacent surfaces were united. The tubercular matter existed in great quantity at the cardiac extremity of the stomach, where it formed a thick mass, agglutinating the stomach and diaphragm firmly together, as if cement had been poured in between them; one part of this mass was softened, but the matter did not perforate either the stomach or diaphragm. The liver, spleen, pancreas, and kidneys, were free from tubercles in their internal structures, as were likewise the uterus and ovaries; but tubercles existed in the Fallopian tubes. The pleuræ, particularly at the back and upper parts of the chest, were thickly beset with them, and there were some adhesions. In the lower lobes of the lungs themselves they were few and chiefly near the surface; but the upper lobe of the left lung adhered to the top of the chest, and its adhesion covered a *vomica* sufficient to contain four ounces of matter, in which the substance of the lung seemed disorganized, and many tubercles hung loose from its walls. The mucous membrane of the alimentary canal was smooth and colourless.

CASE XII.—*Medullary tumour of the pancreas, with gastrodynia, jaundice, and Dropsy.*—A lady, above 40 years of age, recently married, had been long subject to pains in her stomach and bowels; and when I was consulted, 27th January 1829, she had a considerable tinge of jaundice, with which she had been affected in a greater degree the preceding summer. The pains were severe, and she had retching, purging, and dysury. She had fallen much off in her person, and her features were sharp and anxious. Neither her stools nor urine deviated much for some time from their natural colour, but by the middle of February her urine began to tinge linen, and her stools were generally white. The pain became now more concentrated, and occurred in paroxysms like *gastrodynia*, extending from the epigastrium round to the back;—it was not excited by deep pressure in the epigastrium, nor was any pulsation or tumour detected in that region. She became subject to fits of faintness and oppression, during which she said her pulse intermitted. Her bowels were generally too loose, and they were severely acted on by slight purgatives. In May, the limbs became œdematous, the abdomen tense and flatulent, and her colour was now a deep greenish yellow. In July, fluctuation was detected in the abdomen, and the œdema increased. In August, the abdomen became extremely tense, chiefly with air; she was much oppressed, and breathed with difficulty; had fluttering at the heart, a small sharp pulse, thirst, and scanty urine; and her strength and flesh continued progressively to decline. On the 28th she became drowsy, and began to wander, and she died on the 7th of September.

Inspection seventeen hours after Death.—The body was extremely emaciated. The abdomen was soft, and not so large as during life, containing about a gallon of yellow serum. The stomach and bowels were much distended with air. The gallbladder was full of inky bile, and liver of a blackish hue. The pancreas was converted into a tumour larger than a fist, lobulated, whitish, and internally having the colour, and in some parts the consistence of brain, but generally much harder, and containing indurated uncircumscribed masses, which when intersected, presented a uniform smooth surface without the white bands found in *scirrhus*. The gall-bladder being slit open, a probe was attempted to be passed through the duct into the duodenum; but this was rendered impracticable, by the firmness with which the duct was involved in the projecting pancreas. The other abdominal and all the thoracic viscera were sound.

CASE XIII.—*Scirrhous pancreas; with gastrodynia and diarrhœa.*—A married woman, about 30 years of age, consulted me 24th April 1830, when in the eighth month of pregnancy, on account of pain in the epigastrium, occurring in paroxysms like *gastrodynia*, and soon after she was seized with diarrhœa and her mouth became tender. On 31st May, she had dysenteric stools, with pains resembling those of labour, which were relieved by Dover's powder, and she continued pretty well till 9th June, when she was delivered of a son. She was weak and feverish after her confinement, and did not nurse her infant. On 15th June, the diarrhœa returned pretty severely, with very fetid stools. On the 18th, her pulse was 112 and wiry, her abdomen a little tender on pressure, her stools numerous, brown, and fetid, and the attacks of gastrodynia occurred frequently. Her countenance was very pale, her mouth aphthous, and she was reduced to a great degree of debility. From the 23d the diarrhœa became less severe, though her bowels were always loose, notwithstanding the use of opiates and various astringents; her strength, however, continued to sink, and she died on the 8th July.

July 9. *Inspection.* The intestinal tube was in general very thin. But in a few parts, especially a portion about eight inches in extent, near the cœcal extremity of the ileum, it was thicker than natural, with softness and redness of the mucous membrane, but no ulcers. The round end of the pancreas was much enlarged, and the whole gland greatly indurated.

Ayr, May 1835.

References to the sketch, Plate V. Fig. 2.

A. Left bronchus viewed from behind. B. Right ditto.
C. C Œsophagus laid open and reflected to right side.
D. Melanotic matter in ulcer.
E. Melanotic matter exposed by incision over left bronchus.
F. Calcareous concretion exposed by ditto.
G. G. Ulcerated portion of œsophagus.
H. Aperture between œsophagus and left bronchus.
K. Aperture between œsophagus and pericardium.

PART II.

CRITICAL ANALYSIS.

Art. I.—*Clinical Illustrations of the more important Diseases of Bengal, with the result of an Inquiry into their Pathology and Treatment.* By William Twining, Member of the Royal College of Surgeons, London, &c. Calcutta, 1832. 8vo. Pp. 705.

The diseases which Mr Twining has undertaken to illustrate in the present volume are Dysentery, Diseases of the Liver, Diseases of the Spleen, Cholera, and Fevers. The chapter treating of Cholera was published in a separate form in London in 1832; and as such, came then under notice in the fortieth volume of this Journal, p. 177. At present, we propose to direct the attention of our European readers to the consideration of those illustrative facts and doctrines, which the experience of Mr Twining has enabled him to communicate on the other four subjects treated in the present volume.

Mr Twining agrees with all the observers who have treated of the diseases of India, Mr Marshall, Sir George Ballingall, Mr Bampfield, and Mr Annesley, in representing dysentery to be a disease both very frequent and very severe in India, and one, the symptoms of which, though depending principally on inflammation of the mucous membrane of the colon, yet rarely bear any proportion in intensity to that of the local disorder.

Though it may take place at any season of the year, it is most frequent and severe during the rains, and at the commencement of cold weather, that is, from the beginning of June to the end of December; and its most common exciting causes are abrupt and great changes of temperature, and the sudden transition from the hot to the cold season. Among predisposing causes are mentioned recent arrival from Europe, and, in persons already in India, the changes which the constitution is believed to undergo during the previous hot season. Though Mr Twining allows that intoxication is also a frequent accessory cause, and that habitual intemperance is a powerful predisposing circumstance, he observes, that the disease often occurs in Bengal among persons of the most exemplary temperance and regularity of living.

Though it has been very generally maintained by medical practitioners in India, that dysentery is generally, if not always, dependent on disorder of the liver, Mr Twining expresses his doubts as to the necessary and constant connection of these two maladies. Though ulceration of the colon and abscess of the liver are often found in the same individual, yet dissection does not disclose, in the majority of Europeans who die of dysentery, any marks of disease of the liver; and, conversely, dysentery is observed to be very frequent and very fatal among the natives of Bengal, while among them affections of the liver are exceedingly rare. From these facts, in short, and from others mentioned under the head of morbid anatomy, Mr Twining is disposed to regard the doctrine, that dysentery or *colitis* depends on disorder in the functions of the liver, as an assumption which rests on very slender and equivocal foundation.

The description of the symptoms given by the present author is evidently deduced from personal observation; but as it agrees very closely with that given by Sir George Ballingall, we shall merely refer the reader to it.

The account of the morbid anatomy of the disease is highly instructive.

The most uniform phenomena are ulceration of the mucous membrane of the *cæcum*, the colon, the ileo-cœcal valve, proceeding in some instances to the length of perforation, and when the ileo-cœcal valve is destroyed, causing invagination of the *ileum* within the *cæcum*, forming a circumscribed tumour, with constipation and rapid pulse, and eventually strangulation and sloughing of the parts.

Mr Twining further adverts to a very important morbid change in accounting for the alleged presence of symptoms of liver disease. This is the adhesion of the *omentum* to the *cæcum*, and occasionally at the same time to the brim of the *pelvis*,—a circumstance remarked by Mr Marshall and Mr Annesley. Neither of these authors, however, he adds, has adverted to the influence which these adhesions possess in causing pain at the epigastric region, or at the right angle of the colon. When these adhesions take place, irritation, or distension of the *cæcum*, or pressure on its region, produces pain in the transverse arch of the colon, which is drawn downwards by the attachment; pain referred to the same situation is induced by the erect position, or extension of the body in the recumbent, and by raising the arm above the head; and as there is occasionally cough and pain in the right shoulder, all these symptoms are referred to disease of the liver, and the diagnosis is thereby rendered difficult. It is in this manner very often, according to Mr Twining, that the practitioner, if inclined to regard dysentery as dependent on preliminary or simultaneous hepatic disorder, is confirmed in his belief, and may be led to prescribe remedies for the removal of a disorder which has no real existence, while he pays little attention to, or neglects entirely, the disease under which his patient is actually labouring, and perhaps making rapid approaches to death.

"I am anxious," says Mr Twining, "to direct particular attention to this circumstance, and I believe it will be found, that if the dysentery have existed in acute form, for a few days only, and have arisen suddenly, unattended by tumefaction or hardness in the region of the liver; we ought not without strict inquiry, to suppose that the pain in the side depends on liver disease. A pain in the right side, attending diarrhœa which has gradually assumed a dysenteric character; especially if it occur in a person suffering from daily returns of fever for several weeks, with frequent pulse and gradually increasing emaciation; is more likely to be the attendant on liver abscess. And we may feel the less disposed to doubt the nature of a case of this sort, if the above train of symptoms be attended with any fulness in the region of the liver; or with more tension and resistance of the right rectus muscle, than of the left, when we press carefully over those parts."—P. 10.

Another change less frequently observed, as the effect of inflammation of the colic mucous membrane, is thickening and induration of the tunics, such, that, upon making a transverse section, the canal of the colon remains open and rigid like a thick leathern tube, while in the interior the mucous membrane is detached in the form of loose shreds, or entirely destroyed, in the shape of large ragged ulcers. In several cases of this kind, Mr Twining found a thick layer of coagulable lymph interposed between the peritoneal coat of the *cæcum* and cœcal part of the ascending colon and the *iliacus* muscle, sometimes intermingled with an unusual quantity of fat.

In other cases, in which the duration of the disease has been more protracted, Mr Twining found the whole tract of the colon contracted in diameter like a chord, and the mucous membrane sprinkled with numerous small superficial ulcers. In a small number of this order of cases, the inner surface of the *cæcum*, and four or five inches of the colon, with a small space of the sigmoid flexure, are fleshy in appearance, and of a livid red colour, inclining to brown, as if from the growth of granulations; —and in these the symptoms were, much emaciation, dry skin, flat retracted belly, a slaty colour and smooth glossy appearance of the tongue, and the discharges an opaque dirty brown water.

Little doubt can be entertained, we conceive, that this disease consists in inflammation of the muciparous follicles of the colon, which being isolated and separate from each other, become, when inflamed, like red granulations, and when ulcerated give rise to the multiplied minute ulcers remarked by Mr Twining in the inner surface of the bowel.

In a third class of cases, the whole course of the colon presents not above eight or ten large deep ulcerated patches, with thick, abrupt, raised, sloughing edges, surrounded by an extensive thickened base, undermined by sinuses and cavities,—indicating affection of the submucous tissue. In the individuals labouring under this form of colic ulceration, the symptoms were flushed face, restlessness, and febrile disorder unsubdued by remedies.

Inflammation or ulceration of the *ileum* is rare in dysentery. But in some instances Mr Twining observed in those cut off by the disease three or four inches of the bowel contiguous to the *cæcum* affected with superficial ulceration and roughness; and the same appearance, he states, is sometimes observed in the dysenteric termination of protracted fever, and is occasionally one cause of tardy and imperfect convalescence.

Lastly, the cellular tissue at the origin of the mesentery and mesocolon, and by which these membranes are attached to the bodies of the lumbar *vertebræ*, is often somewhat indurated, generally void of fat, and destitute of its usual elasticity and pliability,—a change which Mr Twining ascribes to the instertitial exudation of coagulable lymph. As part of this is adipose tissue, it is not unreasonable to think that the fat has been previously removed by absorption.

From the evidence afforded by the appearances now specified, Mr Twining justly adds to the views given by Mr Marshall, Sir W. Farquhar, and Sir George Ballingall, his evidence in favour of dysentery being altogether an inflammatory disease, and the treatment of which can, consequently, be successfully attempted only by the prompt and energêtic adoption of those means which are known to control inflammation and counteract its effects.

This he does by the employment of blood-letting, general and local, so long as the symptoms of fever and dysenteric affection continue, so long as the belly is painful on pressure, or blood is discharged from the intestinal tube. With this system of depletion, he combines the employment of cathartics and diaphoretics;—or the exhibition of castor oil, compound jalap powder, small doses of Epsom salts, calomel, or blue pill with the first intention; opium, laudanum or ipecacuana with the second; and sulphur with both.

Besides the employment of these measures as the means of controlling the violence of the febrile symptoms, and mitigating the intensity of the intestinal inflammation, Mr Twining imitates the practice found so beneficial by the army surgeons during the peninsular war,—of applying direct sedatives to the inflamed surface, in the form of injections of cold water, and solutions of acetate of lead.

In adverting to the prompt and energetic use of blood-letting, general and local, inculcated by Mr Twining, with the view of arresting the progress and moderating the violence of tropical dysentery, and counteracting the disorganizing effects of that disease, we have great pleasure in remarking the occurrence of a great and beneficial revolution in pathology and therapeutics in India during the last fifteen or sixteen years. Though always convinced, from the accounts of the effects and consequences of that disease on the intestinal tissues, that it was of an intensely inflammatory character, and required the prompt and liberal employment of blood-letting, we saw with equal regret and astonishment, that the prejudices of the great body of old East India practitioners were in this particular so strongly expressed against the use of the lancet, that it was by them regarded as quite absurd to have recourse to venesection for the cure of dysentery. The confidence of these gentlemen in the employment of mercury, and the rapid subjection of the system to the influence of that mineral, was implicit and unbounded; and any one who declined the use of that mineral, and who proposed to attempt the cure of the disease by blood-letting, was regarded as a mere speculatist, or, as these gentlemen termed him, a theoretical man, quite ignorant of the true nature and tendency of the disorder.

This prejudice against the employment of general blood-letting for the removal of dysentery, appears to have been chiefly confined to the East Indian practitioners of the close of last, and the beginning of the present century. For that the practice was used not only by the ancients, but by many modern physicians even in the ordinary dysentery of European countries, the testimony of Dr Donald Monro, Dr Whyte, and Mr Macleod, clearly proves. That, on the contrary, it was believed to be pernicious in India, and consequently never employed, appears most clearly from the testimony of Sir George Ballingall, given in his work on the Diseases of India, first published in 1818. The observations of this surgeon show, that, while he was willing to pay considerable deference to the judgment and experience of the senior Indian practitioners, and therein to follow the established practice of the country, yet his own observation of the disease, and especially of its effects in the dead body, led him to infer, that it was of a character decidedly inflammatory, and required for its speedy and safe removal the early and liberal employment of the lancet. The following extract from the work of Sir George Ballingall, places in a pretty clear light the views of that gentleman, and the manner in which he was led to form them, in opposition to the generally received notions of the Indo-European practitioners.

"In the regiment in which I served, two circumstances contributed to restrain us from a free use of the lancet; the first was a due deference to the opinion of the older practitioners in India, which at the time of our arrival was almost universally against it; the second was the diminution of vigour in the constitution of Europeans, which a residence in India speedily induces, and which in the case of the Royals, was perhaps somewhat augmented by a voyage of full five months, without having touched anywhere for refreshments; so that, by the time we had got over the first objection from repeated experience of the safety and utility of bleeding in other diseases," (Sir George Ballingall here alludes more particularly to the case of fever, in which the opinion of the Indo-European practitioners was still more decidedly hostile to the employment of blood-letting,) "the constitution of the men was reduced to a state which rendered the employment of this evacuation in dysentery extremely questionable, while the complicated nature of the cases latterly occurring induced us to rely more on other remedies. In short, of the few cases of dysentery in which I have employed bleeding, the majority have, I think, terminated favourably; and of those in which the result has been fatal, the appearances on dissection have been such as to excite a sentiment of regret at not having carried the evacuation still farther."—P. 70.

No one who has not been placed in the position which Sir George Ballingall occupied at the time to which allusion is now made, that is to say, in the space extending from 1807 to 1814, when, of course, the prejudices against the use of blood-letting in the treatment of dysentery were strongest and most general, can form any adequate idea of the firmness as well as judgment necessary to adopt and render effective, a mode of treatment so opposite to the one in common use; and no one who does not reflect attentively on the means by which reforms and revolutions in medical theory and practice are effected, can well appreciate the obstacles to be removed, and the difficulties to be surmounted, before a new and correct method is substituted in place of an old and erroneous one. For reasons which are sufficiently obvious, converts are rarely made of old practitioners; and too often it happens that any considerable difference of opinion in therapeutic measures, gives rise to much coldness, if not open dissension, and a sort of determined unrelenting hostility. It is almost invariably the young and rising generation of practitioners who give a patient and candid reception to new doctrines and methods of treatment; and as in process of time their senior brethren withdraw from the field of active exertion, it often happens that the pathological views and the therapeutic methods undergo, in the course of twenty-five or thirty years, a gradual but very complete revolution.

Notwithstanding the cautious and respectful manner in which Sir George Ballingall spoke of the merits of blood-letting as a remedy in dysentery, and at the same time the rational mode in which he had been led to advocate its employment, it is evident from the testimony of Mr Twining, that his views have met with a slow reception in India. It is impossible, however, for empiricism, how confident soever, always to resist reason and correct observation. It is manifest that the doctrines promulgated by Sir George Ballingall on the true nature and most rational treatment of Indian diseases generally, and dysentery in particular, have been effecting a very sure and beneficial change in the pathological views and therapeutic measures pursued; and we must regard the testimony of the author of the present work, as strong and decisive evidence of the kind and extent of the change which has thus been effected. The observations of Mr Twining we have no doubt, have already been of great utility, and will continue to be still more useful, in showing that the apprehension of debility from the use of the lancet in India, is quite as groundless as it is in this country; that, under all circumstances, the employment of seasonable blood-letting is the surest and most effectual method of controlling the violence and arresting the progress of dysentery; and that the main object to be held in view is to subdue inflammatory action in its origin. It should never be forgotten, that in diseases like dysentery, if the inflammation be not speedily subdued, it gives rise to effects in the disorganization of the intestinal tissues, which it is quite out of human power to counteract; and all that the physician can then attempt, is to deceive himself and his patient by the tedious and unprofitable treatment of symptoms.

We are happy to observe, that, upon the same principles on which he enjoins the necessity of early and prompt blood-letting, general and local, Mr Twining studies to restrict the use of opiates in the treatment of dysentery. It will be remembered, that, independent of the general practice of employing the preparations of this drug in most cases of diarrhœa, and in all cases almost of dysentery, Mr Playfair and Mr English many years ago directed the attention of practitioners to the alleged efficacy of exhibiting it alone in very large doses, for the cure of the latter disease. Without pretending to question entirely the accuracy of the testimony of these gentlemen, we must say that it was a desideratum in the cases so treated, that the exact state of the colic mucous membrane was not ascertained. It may be safely presumed, nevertheless, from the previous and subsequent experience of many practitioners, and from the analogy of other inflammatory disorders, that large doses of opium are unsuitable in the early, acute, and inflammatory stage of the disease, while it is still uncontrolled by previous general and local depletion. Their effect is then not to control the inflammatory action, but merely to mask or disguise its symptoms; and both physician and patient may thus be lulled into a deceitful and hollow security until the time for employing effectual remedies is past. "I have very often seen opium exceedingly injurious, by masking the most deadly symptoms until the patient was past recovery. About one case in fifty derives benefit from ten grains of Dover's powder at bed-time after the ipecacuanha and gentian have ceased to do good; and perhaps one in 150 does in like manner find benefit from a night dose of laudanum, or of an opium pill. Generally speaking, opium is only admissible in the small enema above directed;" that is, sixty drops of laudanum with two ounces of water to relieve tenesmus.

In directing the administration of opium, indeed, in such diseases as inflammation of the intestinal tissues, it ought never to be forgotten that the pain, the abatement of which it is given to effect, is a salutary symptom, and is there as an indication of the morbid state of the part,—to make the patient aware of the degree and nature of his complaint, and to guide the physician in the choice of the remedies, and the extent to which they ought to be carried. As the painful sensation in such circumstances is, along with the febrile symptoms, and the preternatural discharges, a very just indication not only of the presence but of the degree of inflammation, the only effectual and rational mode of abating and removing this sensation is by abating and removing the process on which it depends; and as this can only be effected by depletion, general and local, and the degree of abatement can be estimated only by the degree in which the pain is abated, it becomes the primary duty of the physician, in the choice and application of remedies, to observe carefully the sensation of pain, and the influence of lood-letting on it in parts inflamed.

It is the peculiar property of opium to impair natural sensibility and abate that which is morbid; and by means of this property, it possesses the power of temporarily suspending the connection between the nervous system or the common *sensorium* and the different organs, and, consequently, the connection between the common sensorium and the organ morbidly sensible. The exhibition of opium in such circumstances does not remove or extinguish the process which causes the pain, nor does it even remove the pain itself, but, by impairing natural sensibility, it prevents the sensation from being transmitted to the brain, and recognised by that part of the animal economy. From this view of the physiological operation of opium, there can be no doubt that it cannot be expected to be directly beneficial in allaying that pain which is dependent on pure inflammation, and that all that it can do is to disguise or conceal that pain by suspending temporarily the connection between the textures and the nervous system. Wherever, on the contrary, the pain depends on mere augmented sensibility or irritability, independent of such a change in the vascular system of the part as takes place in inflammation, it may be expected to be efficient in allaying that pain by diminishing the morbid sensibility and irritability.

But though opium administered alone, and at the commencement of inflammatory action, may be not only not therapeutic but injurious, by disguising the natural symptoms to which that process gives rise, it is occasionally highly useful as a remedy after the employment of blood-letting, adequate to abate the general symptoms, and the urgent pain of the diseased textures, or in combination with remedies calculated to produce this effect. Admitting this fact to be well established, the explanation of this therapeutic operation of opium is not altogether, nor on all occasions, very easy; but the following observations may tend to illustrate the nature of that operation.

In the existence of every inflammatory disease, there are two distinct conditions to be attended to and opposed;—the one the preternatural distension of the vessels, and the consequent tendency to the formation of morbid products; the other the derangement of the natural properties of the tissue or tissues in the shape of deranged sensibility, animal and organic, and deranged or suspended secretion. For the removal of the first state blood-letting, general and local, and similar evacuating and depressing agents are the appropriate means; and occasionally the same means are to a certain extent beneficial in removing the second. But it occasionally happens that these means are not to the same extent beneficial in removing these two orders of morbid phenomena; nay, it may occur that the employment of the depleting means, by the temporary injury which it does to the nervous system, and to the minute capillaries in the process of secretion, may not only not abate, but may aggravate some of these symptoms. It is then, when the equilibrium between the nervous and the vascular systems are temporarily subverted by the emptiness and consequent atony of the latter, that opium, by temporarily suspending the connection between the nervous and the vascular system, is of very great moment in removing that morbid sensibility, and restoring the sound state of the tissues, and their minute vascular system. Its administration at such a critical moment has the effect of rendering a small, rapid, feeble, fluttering pulse, full, slow, and soft, of cooling and moistening a hot dry skin, and, under the influence of sleep and rest, of restoring the circulation to its wonted and natural channels. The great benefit of opium or its preparations administered under such circumstances, seems to depend principally on the immediate physiological operation either upon the nervous system, or upon those properties of the tissues by which their organic sensibility and contractility are evinced; and the effects then produced generally co-operate with the depletory effects in allaying the morbid sensibility which inflamed parts generally exhibit.

Upon the same principles, it must be obvious that the therapeutic effects of opium cannot be expected to take place in the acute and inflammatory form of intestinal mucous inflammation; and if that remedy is to be exhibited with much hope of success in such an inflammatory disorder as tropical dysentery, it can only be after the inflammatory stage of the disease has been moderated, if not extinguished, by the previous employment of the lancet, or after that stage has spontaneously, or under the use of other evacuants, subsided.

To us, indeed, it appears a singular and unaccountable thing, that, after the strong and decided testimony of all the ablest and most experienced observers regarding the inutility and the pernicious effects of opium exhibited at an early period and indiscriminately, for the cure of dysenteric symptoms, practitioners should still be found capable of advocating a practice so very irrational, and so extremely injurious. The testimony of Zimmermann, it might be argued, regarding the hurtful effects of this drug exhibited for the cure of dysenteric symptoms, might have been quite sufficient to satisfy all rational persons that it was unsafe in practice, and that, if it did not render the disease incurable, it at least protracted the cure to an unlimited period.[*] Yet we find long after that time, from the testimony of Moseley, that it was a common custom in the army and navy practice to administer large doses of opium at night, and always with the effect of aggravating the symptoms in the morning.[†] It ought never to be forgotten, that it ought to be withheld so long as symptoms of inflammation exist.

It affords a proof so much the more satisfactory that tropical dysentery ought to be treated at the commencement as an inflammatory disorder, by the rigid enforcement of every part of the antiphlogistic treatment, and also unequivocal confirmation of the soundness of the views of Sir George Ballingall upon the nature of that disease, that Mr Twining states expressly, that "many cases, if treated at the commencement of the disease, appeared to be cured at once by blood-letting, leeches, and the warm-bath;" and it is not inconsistent with this statement, that in mild cases, the disease may undoubtedly be cured by restricting the patient's diet to tea and gruel in small quantity, keeping him warm in bed, giving a dose of castor-oil daily in the morning, while at the same time we administer two or three doses of ipecacuanha in antimonial wine in the course of the afternoon.

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[*] A Treatise on Dysentery. London, 1771, p. 94.

[†] A Treatise on Tropical Diseases. London, 1803, p. 235.

The beneficial effects of this method of treatment correspond very correctly with the results of the experience of some of the ablest observers of this disease in the West Indies. Thus Moseley, who treated the disease in Jamaica both in civilians and soldiers, was in the practice, after blood-letting, or in cases in which he conceived that evacuation to be unnecessary or inadmissible, of administering ipecacuanha, to excite nausea, vomiting, and diaphoresis, and placed great confidence in the exhibition of small doses of common glass of antimony, (*Antimonii oxydum sulphuratum vitrificatum*,) finely prepared, and made into a pill, so as to induce vomiting and purging, but, above all, profuse sweating. And this agent he represents to be so effectual a remedy, that in cases of dysentery in which the blood was literally running from the intestines of the patient, as in a hemorrhage from a wound, and with the utmost agony to the individual, the first motion after sweating takes place has been less bloody, and the third and fourth scarcely tinged. The same practitioner afterwards was in the habit, when in London, of treating dysentery by administering a scruple, half a drachm, or two scruples of ipecacuan, so as to produce vomiting and diaphoresis, and, he assures us, with very great advantage both as to the rapidity and the permanency of the cure.

The efficacy of ipecacuan in controlling the violence of tropical dysentery was perhaps not less forcibly evinced by the experience of an individual not belonging to the profession, in the case of the rapid and fatal form of the disease which prevails on the coast and banks of the rivers of West Africa. Captain J. Cardin, who had made several voyages to that coast, found that, in trading in the river Senegal in 1784, his officers and men were most severely afflicted by this disease, and many of them were reduced to an extreme state of weakness and emaciation. From recollection of the virtues of ipecacuan in the management of dysentery, he was led to make trial of it, and within one month restored his whole crew. In subsequent voyages he was not less successful; and though most of his crew were at each voyage attacked so as to be quite unable for duty, yet, by timely administration of the ipecacuan, he had never been disappointed in recovering them.

The mode of administration was by giving four grains of the powder in a cup of weak tea, with fifteen or twenty drops of laudanum, on going to bed. This was followed by sickness, but not vomiting, and much relief of pain. Next morning, if the patient was easier, the dose was reduced to three grains, and then to two, morning and evening, which, with diet consisting of rice gruel, was continued till all the symptoms of the disease were subdued.*

It appears to have been much upon the same principle that Dr James Clark of Dominica was in the practice of treating dysentery, by exhibiting one ounce doses of an infusion of two drachms of ipecacuanha root in eight ounces of boiling water, until it checked the frequency and number of the motions, and produced moisture of the skin. This method, which we have advantageously imitated in this country, is also followed as a domestic practice by Mr Twining, in the management of slight cases of this disease. In short, this drug has, according to the testimony of Mr Twining, been much and advantageously employed in the treatment of dysentery, not only of Europeans recently arrived and long resident, but in the cases of Indo-Britons, and in children. It is, nevertheless, to be observed, that it is by no means easy to appreciate its true therapeutic powers in the manner in which it appears to have been exhibited, combined as it is, when in powder, with extract of gentian, and blue pill or calomel, or *hydrargyrus cum creta.*

To the extract of gentian Mr Twining ascribes the power of restraining the emetic properties of the ipecacuan, and diverting the action of that drug from the stomach towards other organs; and he thinks the efficacy of both is much augmented by the addition of the blue pill. But what are the facts or arguments in favour of the latter part of this doctrine?

It may, indeed, be doubted whether the calomel or mercury might not be advantageously omitted; and we are rather surprised, that, while Mr Twining justly disapproves of the practice of making dysenteric patients swallow a certain quantity of calomel and opium with each dose of ipecacuan, he does not perceive that it would be better to exclude the mercurial preparation altogether. The mercury, it is clear, must either do good, do harm, or be useless. If it does good, it becomes impossible to appreciate the therapeutic powers of the ipecacuan, which we believe are adequate with blood-letting, to subdue the disease. If it be either useless or detrimental, then it is clear that it ought to be excluded entirely.

We are, nevertheless, happy to perceive, in the observations by Mr Twining on the employment of mercurial preparations, and especially of calomel, manifest indications of a great revolution in the therapeutics of Indian dysentery. It is well known, that it was the general doctrine among the great majority of East Indian practitioners, that, in order to cure dysentery, it was requisite to exhibit calomel in as large quantity, and with as great rapidity as possible, in order to induce salivation, and rectify the secretion of the liver, upon disorder of which dysentery was believed to depend; and that it was also maintained by another section of the same school, that the exhibition of large doses as a scruple, given repeatedly, was the surest and most expeditious method of curing the disease, and preventing it from disorganizing the intestinal tissues. It is now more than ten years, viz. in 1824, when speaking of the use of mercury in the epidemic of the Milbank Penitentiary, since we had occasion to consider the evidence of these doctrines, and to direct attention to the strong and decided testimony of Sir George Ballingall as to the hurtful effects of this medicine, both physiologically and therapeutically, as a remedy in dysentery. (Vol. xxii. p. 144.) We then considered at sufficient length the question as to its merits as a remedy in intestinal inflammation and ulceration; and we have only to refer our readers to the observations then made, and also to some previously made on the same subject in the account of the work of Mr Bampfield.

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* Memoirs of the Medical Society of London, Vol. iii. p. 517. London, 1792.

We are happy to observe, from the evidence given in the present volume, that Mr Twining at least is aware of the absurd and pernicious tendency of this sad system of empiricism, and that he condemns the method of treatment by the exhibition of calomel in either mode, as one quite inadmissible, and tending, if employed in Bengal, to the inevitable destruction of life. The advocates of both methods of exhibiting calomel, he contends, proceed on erroneous principles in their reasoning as to the pathological causes of dysentery, in assuming without sufficient proof the existence of previous disease of the liver in every case. Mr Twining very properly asks, if dysentery be owing to derangement of the biliary secretion, how it happens that the colon is chiefly affected, while the ileum escapes, though the bile believed to be morbid has to pass along the latter before it reaches the former? Nor is it from speculative views only that Mr Twining donounces the exhibition of calomel as detrimental. He admits, that he has, like other practitioners, tried that medicine extensively in every form of the disease, and he has too often seen the fallacy of trusting to its effects for the cure of the severe acute dysentery. In the passage which we quoted in our twenty-second volume from the work of Sir George Ballingall, regarding the physiological effects of this mineral on the mucous membrane of the intestine, and also from the observations made by Mr Scott, on the chemical and physiological effects of large quantities of calomel on the gastric mucous membrane, it must be obvious to the most superficial observer, that this mineral preparation is much more likely to induce, than to cure and obviate, inflammation and ulceration, and would be admirably calculated to precipitate inflammation into ulceration, and the latter into perforation of the bowel, or at least gangrene. Yet it appears, that, in opposition to the deductions thus incontestibly established, some practitioners are so rash as to urge the use of the mineral, and persist in its use, when such perseverance can only entail the destruction of the unfortunate patient. If any such remain unconvinced, we beg them to think well on the following statements, evidently made from very considerable practical experience.

"We often meet with cases of dysentery in Bengal, in which the disease remains in a very distressing degree, after salivation has been fully established; and we only relieve the patient by changing the treatment. In many cases the effects of mercury are evidently injurious through the whole course of the disease, and persistence in the mercurial plan of treatment is sure to destroy the patient. The unfavourable effects of mercury are very conspicuous in cases where a scorbutic diathesis exists; and in patients suffering from splenic *cachexia*. Mercury is also very injurious to many dysenterics who are voiding large quantities of blood, partly coagulated, and exhaling a putrid odour; while the patient's skin is perspiring freely, and there is little or no disorder of the pulse."—P. 42, 43. Mr Twining afterwards reports that he has met with a vast number of cases in which mercury had been used so as to cause salivation, without curing dysentery.

This evidence is so much the more valuable, that Mr Twining is not an indiscriminate enemy to the use of mercury,—which appears from the fact, that he specifies one description of dysenteric disease in which he has several times witnessed immediately good effects result from the administration of a large dose of calomel. The case is that of robust adults, where there is considerable fever, with the disease of not above two or three days duration, where the calls to empty the bowels are frequent, and the motions consist each time of about half an ounce of reddish mucus. In such states of the disease, Mr Twining recommends first the abstraction of from one pound and a-half to two pounds of blood in the recumbent position; immediately after, a scruple of calomel, with the same quantity of ipecacuan, made into eight pills, with only two spoonfuls of barley-water every half hour; and at the end of four hours a drachm of the compound powder of jalap, and an anodyne enema at night. By this mode of treatment, cases of the kind now specified, according to Mr Twining, are cured by a single day's treatment, or at most two days.

In the scorbutic form of the disease, the author agrees with all those who have treated of this variety of intestinal disorder, that it is the least tolerant of mercury, and that by this mode of treatment it is most certainly precipitated to its fatal termination. What could be thought of this evidence given on the question as to the treatment of the alleged scorbutic dysentery of the Milbank Penitentiary?

In the treatment of dysentery affecting the *rectum*, Mr Twining recommends, besides the remedies already enumerated, the application of leeches to the anus, a drachm of laudanum, with two ounces of cold water as an enema at bed-time, moderate doses of blue pill and compound extract of colocynth in the morning, and the introduction of about half a drachm of Goulard's ointment into the *rectum*. In cases of this kind occurring in this country, and those left as *sequelæ* of the tropical disease, the most certain means of relief we have found in the injection into the *rectum* of about ten grains or a scruple of sugar of lead dissolved or suspended in two or four ounces of water.

In the formidable variety of dysentery, in which the cœcum becomes enlarged, and forms a considerable tumour in the right iliac region, from interstitial deposition of coagulable lymph between the coats of the intestine, and in the cellular tissue between it and the *iliacus internus* muscle, the treatment by depletion is still more urgently requisite. But it particularly demands the daily application of leeches over the iliac region, followed by fomentations and poultices, counter-irritation by means of blistering, and a course of Plummer's pill, with extract of colocynth at night, and compound powder of jalap in the morning, —aided by rest in the horizontal position, and restrained diet of milk and grain.

On the question as to the connection and mutual influence of dysentery and hepatic disease, the experience of Mr Twining furnishes the following results.

The advanced stages of abscess of the liver are almost always attended with dysenteric symptoms, which dissection shows to depend on ulceration of the colic mucous membrane. Conversely, there are sufficient reasons for concluding, that extensive acute disease of the great intestines occasionally excites hepatic irritation, with tendency to suppuration; and in some instances of this description, deep-seated abscess of the liver takes place, notwithstanding the most decisive and appropriate treatment. This transition of diseased action, the author seems to ascribe to irritation extending to the mesocolon. How does it happen, we beg to ask, that it does not pass by the same channel to the stomach? In cases of the kind referred to, the symptoms of liver disease do not appear till the dysentery has existed several days, and they frequently commence when the quantity and frequency of the intestinal discharges has abated, when blood is voided only in small quantity, and the other symptoms are evidently on the decline. There may, indeed, be apparent convalescence for a day or two, when suddenly the patient complains of hot forehead and dry skin, the cheek is tinged with a hectic flush, the pulse is quickened, and the mind is fretful and irritable.

> "At a very early stage of these affections, when the hepatic disease is seated in the right lobe, the right *rectus abdominis* muscle is more tense than the left, and it resists pressure by an involuntary resiliency. In a few instances the patient has pain at the point of the right shoulder. These symptoms may exist a day or two, before palpable enlargement of the liver is detected; and before pressure over the right hypochondre causes pain. At the same time the stools become frequent and scanty; and in those cases where there is distinct hectic appearance, or much febrile excitement, their colour is of a deep orange inclining to red: but in other cases nearly similar, only having the hectic flush and febrile excitement in more obscure degree, the stools are very scanty, black, viscid, and adhesive. This dangerous affection of the liver seems to arise from the abrupt cessation of copious secretions from the mucous membrane of the intestines, while some degree of the inflammatory condition is unsubdued; the decrease of the discharge from the bowels, giving rise to relative plethora of the mesenteric vessels, and consequent hepatic congestion and irritation. This consecutive hepatic affection is dangerous, because it takes place when the practitioner is generally relaxing in the diligence of his examinations, and remitting his remedies; as well as allowing more food, under the impression that his patient is cured."—Pp. 99, 100.

The treatment in this case consists of general blood-letting if the strength admits, small, if not large, low diet, local bleeding by means of leeches to the right hypochondrium, repeatedly applied, till pain and swelling are removed; eight grains of compound extract of colocynth, with four grains of calomel, and two of aloes, given every morning in the form of pill, followed by half a drachm of compound powder of jalap, repeated every three hours till motions are produced. After the cheek has lost its flush, the skin its preternatural heat, and the region of the liver ceases to be painful, a blister is applied over the region, and kept open for ten days. Perfect tranquillity, the recumbent position, and the tepid foot-bath twice a-day, are also enjoined.

Sloughing of the intestinal mucous membrane is generally a fatal circumstance. From analogy, the author has tried sulphate of quinine and small doses of opium.

In the management of dysentery in the natives of Bengal, the chief peculiarity is, that the disease, though of an inflammatory character, is less intensely so than in Europeans, and consequently demands a less extensive form of the antiphlogistic treatment. General blood-letting is neither required nor endured to the same extent as in Europeans; and sometimes Mr Twining has dispensed with the application of leeches. But when inflammatory symptoms exist, as pain of the belly, hot dry skin, and bloody discharges from the intestines, Mr Twining orders first the application of leeches to the epigastric region, to be repeated according to their effects, and the tractability of the disease. To the use of the warm-bath he is less partial in Asiatics than in Europeans, on the ground that it suits ill to modify much or derange the physiological susceptibilities of the skin in persons accustomed to light thin clothing, and in whom most of the person is habitually uncovered. In the exhibition of ipecacuanha, on the contrary, he places great confidence, and recommends greater reserve in the use of the combinations of calomel and the blue pill. The cathartics, also, are diminished to half doses; and carminative remedies, as mint oil, assafœtida, or tincture of cardamum with infusion of Chirayta, the gentian peculiar to Hindostan (*Gentiana Chirayta*,) seem more requisite and admissible. For tenesmus, which is represented to be a severe symptom in the dysentery of Asiatics, Mr Twining employed a night draught, consisting of ten grains of Dover's powder, and one grain of ipecacuan, in an ounce of weak infusion of Chirayta,—in consequence of their insurmountable aversion to the use of glysters. In the article of diet, their habitual temperance, approaching often to ascetic abstemiousness, renders them easily managed. But this very circumstance requires that, when sickly, the food should be still less exciting both in quantity and quality than the fever diet allowed to Europeans. On this account Mr Twining denies them the use of milk and rice, or any of their preparations.

Hindoos and other Asiatics are liable, during or after the operation of dysentery, to be afflicted with mental despondency, which renders complete recovery still more difficult and impracticable. And the natives of the upper provinces, if attacked with the disease in the lower, do not completely recover till they return home, when they become well without the use of medicine.

Diseases of the liver occur so frequently in combination with, or after fevers in intestinal discharges in Bengal, that it is almost impossible to give a complete and just view of hepatic disorders without referring to the cases in which fever or dysentery may have been the original and most urgent disease. The disorders of the liver that may supervene in this manner may be distinguished into two general disorders, those in which the functions only, viz. the circulation and the secretion of the gland, are deranged, and those in which its structure are altered. The former order, which very generally elude anatomical investigation, are not very accurately known; and Mr Twining thinks that, although they are really important, they may be often exaggerated in number, and that they would be greatly diminished if a short critical inquiry into their nature were instituted. He even hints, that, in a subject so imperfectly known, and in which practitioners are so much disposed to ascribe every obscure species of bad health to disorders of the liver, these dynamic disorders of the liver may be often assumed to exist from symptoms which depend upon other causes, and that treatment is adopted which may prove to be not only unnecessary, but injurious. With the view of striking at the root of this deplorable species of presumptuous empiricism, Mr Twining distinguishes the varieties of morbid changes most commonly met with in the liver and its appendages in the following manner.

1. Morbid changes in the gall-bladder; *α.* increase in size, and distension with bile, rendering the cystic fissure large and deep,—most common in persons recently arrived in India; *β.* diminution in size,—occurring in persons long resident in Bengal.

It appears that frequent repletion, and habitual over-excitement of the gall-bladder and neighbouring parts, with disorder of the upper portion of the *duodenum* and *jejunum*, give rise to transient and circumscribed inflammation, causing effusion of coagulable lymph over the gall-bladder, and in the cellular structure of the capsule of Glisson. As this lymph is organized and shrinks, it causes constriction of the gall-bladder. It is attended at first by pain, which may recur for years; but afterwards it seems to produce little inconvenience, and no constitutional affection.

2. Enlargement of the liver, with a dark colour and softened consistence, bleeding freely when divided.

3. Abscesses of the liver, of four different kinds; *α.* a large quantity of matter, dark-brown or reddish and serous, the contiguous texture softened and gorged with blood;—the acute abscess formed in the course of fevers, acute dysentery, and in drunkards; *β.* a small quantity of matter with a large disorganised portion, consisting of tough whitish-gray sloughs, hanging from the sides of the cavity;—the scorbutic form; *γ.* a circumscribed abscess, surrounded with a thick coat of coagulable lymph;—rare; and *δ.* numerous small abscesses the size of a filbert dispersed through the gland, the cavities lined sometimes with coagulable lymph, sometimes not; the abscess of strumous subjects.

A curious and interesting fact stated under this head is, that, in the dissection of subjects who died of abscess of the liver, Mr Twining has twice found a small quantity of puriform matter in the right ventricle of the heart; and in both instances he traced the same appearances with small filamentous coagulum into the veins of the liver.

"The internal membrane of the hepatic veins was inflamed, but I could not discover any communication between the abscess of the liver and these vessels; and am therefore disposed to ascribe the formation of pus to inflammation of the hepatic veins. Both these patients were recent arrivals in India, not of very temperate habits, and their complaints began as common diarrhœa of severe description. On referring to their cases, the only difference observed between these and the usual course of liver abscess, was the more active pyrexia in the early part of the disease; and towards the conclusion unquenchable thirst, extreme anxiety, and frequent disposition to faint: but the patients never complained of palpitation, or any other symptom directly referred to the heart. In these cases, some degree of morbid heat of skin continued to the last."—P. 140.

4. Adhesions of the liver to the diaphragm or stomach, with more or less thickening of the peritoneal coat.

5. Black discoloration of part of the liver, usually attended wish some softening of the liver,—occasionally seen in dysenteric subjects,—regarded by Mr Twining as a species of slow inflammatory action with great congestion.

6. Tumours, varying from the size of a grain of barley to that of a bean, situate in the capsule of Glisson. Two of these may always be found on careful dissection; and from structure, position, and appearance, Mr Twining regards them as lymphatic glands. Of these, one is situate near the neck of the gall-bladder, the other at the upper end of the *ductus communis choledochus*; and as when enlarged they may compress the duct and obliterate its canal, their presence and enlargement affords an explanation of the origin of jaundice in these cases.

7. Enlargement of the liver without change of colour, or with a slightly paler tint than natural, but with the surface indented by the ribs; most frequent in leucophlegmatic subjects, and manifestly œdematous.

8. A slate-colour of the liver, with slight induration and toughness of texture,—mostly seen in patients who have had remittent fever, and were cut off after a second attack.

9. Enlargement with paleness and softening, and leaving an oily stain on the knife. Is this a form or stage of the adipescent liver?

10. Induration and enlargement, with a pale drab colour,—structure resembling boiled cow's udder. The section bloodless or bleeding little.

11. Puckered depressions, like *cicatrices* on the convex surface of the liver, interior showing induration from deposit of coagulable lymph, but no condensation.

12. Concretions, in colour and consistence like yellow soap, extending along the biliary canals; —rare.

13. Enlargement or relaxation of the hepatic duct, observed in persons long resident in India, and who have laboured under chronic diarrhœa, with numerous copious, fluid, pale yellow stools.

14. Obliteration of the biliary ducts occurring in the cases in which the changes marked 9 and 10 had taken place. 15. Tubercles. 16. Hydatids. And 17. Gall-stones in the gall-bladder.

Mr Twining then enters on the semeiography of the most common inflammatory affections of the liver, and delivers this important part with much clearness and precision. As the great object of the practitioner in the cure of *hepatitis* is to prevent suppuration, and by all means to promote resolution, it is important to possess diagnostic marks by which the existence of the disease in its yet curable state, by means of resolution, may be recognized; and on this point Mr Twining states, that he has never seen a case terminate in abscess, without our being able, by careful examination, to detect the disease in progress, long before there was reason to believe that suppuration had taken place. The best mode of accomplishing this is to place the patient uncovered on his back on a couch, with the head depressed, while the physician, placed at the foot of the bed, observes whether the right side is enlarged, the cartilages of the ribs extruded, or if there be more fulness in the right epigastric region than in the left. The existence of pain, superficial or deep-seated, is also inquired into and ascertained; and after observing the sensations in the region of the liver during a full inspiration and complete expiration, it is necessary to examine the hepatic region, before and behind, while the patient is lying on the left side, and tending towards the prone position. These measures are requisite chiefly to determine the presence or absence of acute superficial inflammation of the hepatic substance at the convex region of the liver, not peritoneal exclusively, and which is more frequently observed during the hot months of April and May than at any other season.

The *inflammatory congestion, with tendency to central suppuration,* though the most prevalent form of acute hepatic disease in Bengal, is somewhat different. The disease becomes frequent during the rains, that is, from June to September; but is most prevalent during the two first months of the cold season, that is, from the 10th November to the 10th of January. It is attended with more visible and distinct enlargement and tension in the right hypochondriac and epigastric regions, more thoracic oppression and impeded respiration, but with less morbid sensibility upon the hepatic region than in the acute superficial form of the disease. To this also the symptom already mentioned of greater tension of the right *rectus abdominis muscle* than of the left, is in some degree peculiar,—a circumstance which Mr Twining ascribes to the former instinctively resisting pressure, while the latter muscle and the rest of the belly is lax and elastic. It is a further confirmation of the value of this symptom, that in patients who have died of abscess of the left lobe, only the left *rectus abdominis* presented to Mr Twining the same species of quick and instinctive contraction.

A third species of hepatic disorder, of an acute or subacute character, is common at all seasons of the year as a *sequela* of fever, in which the abdominal congestion has not been adequately counteracted by a steady system of administering mild but efficient purgatives during convalescence. For the particular description of the symptoms of this disorder we refer to the work itself.

In considering the causes of hepatic inflammation and suppuration, Mr Twining attaches great importance to the influence of full living, and the retention of the European habits of eating and drinking stimulating liquors in the burning climate of India. The following observations deserve the attention of the European who goes or has gone to India, whether physician or civilian, or military officer.

> " Habitual plethora, and superabundance of stimulant food, beyond the real wants of the constitution, doubtless keep the greater number of Europeans in India in an almost perpetual state of proclivity to inflammatory and suppurative disease of the liver. This is especially the case in Bengal at the beginning of the cold season, when the profuse action of the skin that had existed for many months becomes restrained; the predisposition to disease from the past hot season and rains remaining. Hepatic abscess often arises from the combined influence of several of the above causes in Europeans of temperate and reserved habits of living. I do not remember ever having seen an abscess of the liver in a man who was at the time suffering much from numerous painful and inflamed boils."–P. 153.

But this is not all. It seems that there, as well as here, the practice of treating with opium and stimulants *delirium tremens*, the *oinomania* of the foreign physicians, and which is merely meningeal inflammation, induced by the constant excitement of spirituous liquors, is very fashionable, and produces effects not less detrimental to the general health and the organs of nutrition. Some there are even who tell us that it is highly injurious to withdraw entirely the use of stimulant liquors, and that persons accustomed to this species of excitement must proceed in the path in which they have been accustomed to tread. These defenders of this practice, however, do not reflect on the irreparable mischief they are daily and hourly inflicting on the spleen, the stomach, the duodenum, the ileum, the lungs, the kidneys, and the arterial tissue in all its ramifications. Let those who think the practice harmless in this cold foggy climate, which they conceive requires the stimulation, read the following remark:—" There seems reason to believe, that the stimulant and opium treatment of *delirium tremens* often lays the foundation of abscess in the liver: or I would rather express in other words, my belief that hepatic abscess would less frequently follow *delirium tremens*, if that complaint, when combined with febrile and inflammatory symptoms, were more commonly treated by antiphlogistic means."

In conducting the treatment of these inflammatory disorders of the liver, Mr Twining appears again as a great advocate for the use of venesection, and, like a judicious practitioner, never loses sight of the fact, that the great object is by all means to promote resolution and prevent suppuration. Beginning first with an active cathartic, he draws blood to the amount of a pound and a-half or two pounds, repeats the blood-letting in the course of six hours, unless the pain and swelling are abated, and three hours after, applies twenty leeches to the side or epigastric region. General blood-letting is rarely requisite more than two or three times on the first day, and once on the second; but the application of leeches to the side should be repeated daily, until the pain and fulness in the region of the liver, with other symptoms of hepatic disease, are removed. The forenoon is the best time for these local bleedings, because continned oozing during the night may disturb and alarm the patient.

At the same time, it is desirable to diminish as much as possible the congested state of the vessels of the alimentary canal by low diet, and by the frequent administration of cathartics, of which calomel and colocynth at night, followed by the compound powder of jalap, or the black draught in the morning, are recommended as most eligible.

The revellent or derivative power of the blister is next put in requisition; and its effect is augmented by the daily application of leeches round the edges of the blistered surface. Half a drachm of camphorated mercurial ointment is then directed to be rubbed over the right side once daily, with the view of promoting the removal, by absorption, of interstitial deposit, diminishing congestion of the liver, and equalizing the circulation over every part of the system.

Mr Twining attaches great importance to the application of blisters and the employment of mercury in the manner now specified, after the acute and urgent symptoms have been subdued by suitable depletion, and when there is reason to believe that the evacuations have produced their full beneficial effect. This we believe to be perfectly well founded with regard to the effect of blisters and similar revellents; but we doubt whether the mercurialism is of much real benefit, either without or after previous evacuation. It is difficult to perceive what the constitutional influence of mercury can effect, which may not be accomplished by local depletion and revulsion, low diet, and the steady periodical exhibition of gentle purgatives; and we believe, that, where these agents are put in steady and persevering operation, they will effect a safer and more permanent cure, than any mercurialization, however moderate, or however modified.

We must, however, do Mr Twining the justice to say, that he is certainly the most rational and powerful advocate for the employment of antiphlogistic measures in attempting the removal of hepatic disorders that India has yet produced. He is deeply impressed with the necessity of the use of antiphlogistic measures in the extinction of inflammatory action, and preventing its effects; he appears to be fully aware of the necessity of persevering in the employment of these measures to a greater extent, for a much longer period than is commonly done; and what is of not less moment, he in various parts of his work shows that this perseverance is quite adequate in many instances to subdue entirely the disease, and in the most intense cases, to put an effectual barrier to its ravages on the structure of the organ.

In impressing the necessity of attention to these rules, Mr Twining proceeds, of course, upon the principle, that, while hepatic abscess in Europeans is very frequently a fatal disease, yet it proceeds through a series of stages, in the course of which it is often practicable, first to retard the progress and abate the violence of the morbid action, and then to counteract it altogether. The great point is to establish the diagnosis, and this once done, it is quite indispensable to carry into effect the therapeutic measures, remedial and dietetic, which the symptoms of the case demand.

It is a most important and satisfactory corroboration of the justice of these principles, that, in the fatal cases detailed in the present volume, the unfavourable issue is always very clearly to be traced either to venesection being too long neglected, not being carried to a sufficient extent either in amount or by repetition, to insufficient local depletion or revulsion, to inadequate evacuation of the intestinal tube, or to neglect of observing a diet sufficiently low, and premature return to nutritious food. As illustrations of the pernicious effects of the causes now specified, these cases deserve the attentive consideration of practitioners.

In the treatment of the chronic form of the disease, it is still more incumbent on the practitioner to persevere in the use of the antiphlogistic regimen, in the use especially of the means of local depletion and revulsion, and strict attention to diet. In these forms of disease chiefly it is that perseverance is indispensable, and that such long operating agents as diet are efficient. It is much to be regretted that patients do not understand, and are not very easily taught to comprehend, the necessity of long-continued restraint in eating and drinking,—and that some physicians either do not themselves believe in the influence of these measures, or take no pains to obtain the full effects of a system of restrained diet. Though, in temperate climates and under slight forms of hepatic disease, patients may occasionally recover, notwithstanding gross neglect and frequent violation of dietetic rules, it is very different with the intense and serious lesions produced in tropical countries. The patient in the former situation not unfrequently imposes with impunity on the physician and surgeon; and when he has made an escape, which is due more to accident than to judgment, he triumphantly adduces the result as a proof of the mistaken views entertained, the unnecessary restraints imposed, or the improper treatment pursued by his medical adviser. In the latter situation, every deviation from the strict rules, remedial and dietetic, enjoined by the physician, betrays itself in the persistence or aggravation of the disease; and the patient is made to feel, in the daily augmentation of all his symptoms, the effects of his own wilfulness and deception.

We think that, among other benefits resulting from the testimony of Mr Twining, we may place that of showing the necessity, not only of the practice of depletion, but of the most rigid attention to diet in the cure of chronic *hepatitis*. The author gives several examples of this form of disease, in which the complaint was long protracted and very obstinate, until a persevering system of local depletion, with periodical evacuation of the bowels and very restrained diet, were adopted and continued; and, subduing one symptom after another, at length effected a complete recovery. Of this fact, the fifty-first, fifty-second, and fifty-ninth cases are instructive examples.

We must, nevertheless, avow our surprise, that while the author shows so evidently his conviction of the benefit of general and local antiphlogistic measures, with revellents and derivatives, he does not appear to have made much trial of one order of agents which must be regarded as very effectual, and well suited to the removal of disease in glandular or parenchymatous, and other very vascular organs. We allude to the revellent faculty of the caustic, actual or potential, the seton, and the moxa. In organs such as the liver, more especially after copious and repeated local depletion, next to purging and restrained diet, no agent acts with such certainty in unloading the vessels of the congested or inflamed organ, and diverting their contents in a different channel, as those which in this manner establish and maintain a considerable inflammatory action, approaching in chronicity to that of the diseased organ. It is not by the quantity of matter discharged, or the drain, as is vulgarly thought, but by the intensity and endurance of the new action, that the benefit is effected.

The treatment recommended by the author for jaundice, shows reflection and judgment matured by observation. He very properly recommends, previous to the adoption of any plan of treatment, diligent inquiry into the state of the general health, and the nature and duration of the diseases under which the patient may have recently suffered. In cases of jaundice with enlargement or induration of the liver, of course means to diminish both must be adopted. In cases of intense jaundice without enlargement of the liver, but with the usual circumscribed pain in the region of the gall-bladder and gall-ducts, with stools nearly white, or of a pale clay colour, he recommends treatment essentially antiphlogistic, with cathartics, the tepid bath, and sudorifics, aided by the observance of low diet and quiescence at first, and afterwards by the use of Cheltenham salts, with camphorated frictions over the hepatic region. To mercury in this state he is averse, and condemns its indiscriminate use.

In the cure of infantile jaundice, however, he avails himself of the purgative powers of calomel, scammony, and the compound powder of jalap, aided by the use of castor oil.

In the third chapter, Mr Twining makes some very instructive observations on the nature and effects of diseases of the spleen, and their most appropriate mode of treatment. This subject, though extremely important, has nevertheless received little attention; and, with the exception of the remarks of Dr Bree, and the excellent monograph of Grotanelli, on the enlarged and diseased states of the spleen, occurring among the peasantry of the Pitiglian territory, we are unacquainted with any satisfactory remarks on the subject. These observations, therefore, of Mr Twining, are perhaps the most original of his work; and certainly they are, next to those of the Italian physician now mentioned, the most entitled to the diligent consideration of the practical reader.

From the testimony of Mr Twining, disorders of the spleen appear to prevail in Bengal, as in all miasmatic territories, to a very great extent. Mr Twining, however, does not regard the mere enlargement of the organ as the principal object of attention; but he considers it as parts of a general constitutional disorder of a peculiar character;—indicating itself by feebleness, paleness, and deficiency of red blood in the vessels, chlorotic discoloration of the countenance, gums, and tongue, dryness and shrivelling of the skin, which conveys the idea of a withered leaf, and coldness of the extremities.

It is further remarkable, that in adults of a pale sallow aspect, this enlargement of the spleen gives rise to few formidable symptoms, excepting the inconvenience of a swelled belly, with short breathing, and occasional fits of indistinct ague; while in children, it causes much disorder of the health, decay of strength, and eventually marasmus. This peculiarity Mr Twining appears to refer to the fact, that in the former the growth being completed, the splenic disorder produces much less inconvenience, and a much less serious impression on the system, than in individuals only growing, and not yet arrived at puberty.

An observation occasionally made in European countries, that females affected with enlargement of the spleen are liable to suffer from *amenorrhœa*, Mr Twining also confirms as to India; and he regards the continuance of the menstrual secretion, notwithstanding the enlargement of the spleen, as affording a reasonable prospect of recovery. The former observation is important, as it directs attention to the influence of the splenic and gastro-splenic circulation, and thereby of the process of digestion on the tone of the circulation, and especially on that of the *uterus*. The state of the vessels of the latter organ is indeed a remote and late result; but it is nevertheless a frequent concomitant of languid gastro-splenic circulation. It is requisite in this matter to look to the early stage of the disorder, which is one chiefly of the function of the splenic and gastro-splenic vessels. In the statement of symptoms before us, though the semeiography is given with sufficient accuracy, perhaps there is too little attention paid to chronological order, or their physiological relation.

Mr Twining justly enumerates among the usual attendants of vascular engorgement of the spleen, impaired appetite, difficult digestion, and imperfect assimilation of food, despondency and depression of spirits, inactivity of body, with muscular debility, yet without much emaciation. These may be regarded as characteristic of the first stage of the disease. Then come pain of the left side, short and imperfect respiration, especially on any muscular effort, and more or less wasting, generally with a sallow, dingy, or waxy colour of the surface.

After this two different states may ensue. Either *hematemesis* or *hemoptysis* may take place, when the organ is much enlarged; or the blood loses part of its coagulating power, showing a loose soft black clot, with little or no separation of serum, which gives a friable coagulum, and tendency to hemorrhage from slight scratches, wounds, or injuries. In the former, Mr Twining, who observes that patients recover the loss of blood very quickly, and are sometimes thus cured of their splenic disease, thinks it probable that the blood ejected flows into the stomach from vessels communicating directly with the splenic vein. We believe that it would not be difficult to show that the blood thus emptied proceeds immediately from the gastro-splenic capillaries, distributed chiefly to the large or cardiac end of the stomach.

On the subject of the Causes of splenic enlargement, we must allow Mr Twining to speak for himself.

"Diseases of the spleen often occur in conjunction with dysentery, intermittent and remittent fever, scorbutic affections; and sometimes with diseases of the liver.

"The tumefaction of the spleen occasionally comes on very suddenly, in the course of remittent fevers, in Bengal; and in a few days the enlargement can be seen, as well as felt, extending far below the cartilages of the left false ribs. The degree of enlargement which takes place is variable; it is very common to see the spleen extending downwards on a level with the umbilicus; and latterly, from its usual situation, as far as half way between the cartilages of the ribs and navel. In extreme cases, the diseased spleen fills more than half the belly, extending to the right of the navel, while its lower extremity reaches the left iliac region. Several cases of this enormous tumefaction may be seen every year in Calcutta; and some of them recover. Besides the globular tumefaction of the spleen above-mentioned, there is a more oblong enlargement, in which the anterior edge of the organ is felt deeply indented with fissures. In this description of disease, there is more induration than attends the globular tumour; and the patients are cured with greater difficulty. This is considered by the native practitioners a very dangerous and intractable form of the disease.

"The greater number of cases of the affections above described are unattended with local inflammation; although there is almost always morbid sensibility, on pressure being made over the left hypochondre, during the early stages of enlarged spleen; and sometimes slight pressure over that part causes exquisite pain. *Splenitis*, or acute inflammation of the peritoneal coat of the spleen, would appear to be a rare disease; it sometimes exists without much enlargement of the organ, and then the symptoms very much resemble *pleuritis* of the left side: doubtless *splenitis* is occasionally cured, by the antiphlogistic treatment pursued, when *pleuritis* is supposed to exist. Pain in the left shoulder is rarely present.

"The progress of vascular engorgement of the spleen is more or less rapid, according to the injury which the constitution may have suffered from damp climate, and the nature and duration of the fevers which the patient may have recently suffered.

"Enlargement of the spleen sometimes appears as an idiopathic disease in children, and in persons of delicate and feeble constitution; and is produced by the combined influence of a damp climate, variable temperature, want of exercise, unsuitable clothing, and insufficient nourishment. During the slow and silent influence of long-continued grief, and distress of mind, the secretions generally appear to be perverted, the cutaneous circulation becomes languid, healthy transpiration obstructed, and then we often find enlargement of the spleen take place in Bengal. The disease, when dependent on such causes, is always difficult to cure. The most part of the cases of vascular engorgement of the spleen in this country follow intermittent and remittent fevers: and tumid spleen may be stated as the most invariable consequence of acute and debilitating diseases, among children of weak constitutions in Bengal. The same sort of enlargement takes place here in the spleen of adults, in consequence of various debilitating diseases, (but more especially after protracted remittent and intermittent fevers,) which we occasionally meet with at all seasons; but they are seen in their worst forms about the latter ends of the rains, and commencement of the cold season: just when concentrated exhalation and considerable diurnal changes of temperature coexist, which repress the action of the skin, and force the circulating fluids on the internal organs of the body. At that season of the year, congestive fevers are frequent, and lamentably fatal, at the low and damp situations in these tropical regions. These fevers prevail not only in the country forming the delta of great rivers; but in the marshy situations at the foot of hills and mountains, where the soil is composed of alluvial and vegetable remains, washed from the neighbouring hills, into situations where there is no drainage, and an imperfect ventilation. The assemblage of constitutional symptoms described in the foregoing pages, constitutes *the endemic cachexia of those tropical countries that are subject to paludal exhalations.* The enlargement of the spleen is the most frequent attendant on this cachexia; and its increase, or subsidence, generally corresponds with the unfavourable or favourable changes which are taking place in the constitution. It is, however, proper to observe here, that the constitutional symptoms sometimes exist in a very marked degree, where neither enlargement, nor morbid sensibility of the organ itself, are very palpable."—Pp. 276—279.

The various forms of morbid change of the spleen are referred by Mr Twining to the following heads.

1. Soft round enlargement of the spleen, with great mollescence, and easy lacerability; most common along with or after the severe remittent fever of the rains and cold seasons.

2. Oblong enlargement of the spleen, with increase of consistence, the edge thin and notched, the colour pale-brown or dusky-red, associated with inflammation.

3. Opaque patches, varying in size over the convex surface,—the effect of membranous inflammation.

4. Adhesions of the splenic *peritoneum* to the contiguous *viscera*,—not a general effect of enlarged spleen.

5. Indurated, friable, and lacerable spleen.

6. Induration, with intersection of fibrous *septa*,—commonly denominated *scirrhus.*

7. Tubercles, various in size, generally small, gray or brown in colour.

8. Organized coagulum of the splenic vein.

9. Encysted tumours.

10. Abscess of the spleen. The latter four changes are rare in Bengal.

The experience of Mr Twining as to the treatment found most successful in removing vascular engorgement of the spleen, agrees with that of most physicians who have treated of this subject, in recommending the administration of a steady course of purgative medicines, combined with bitters and preparations of iron, of which small doses of the sulphate are represented to be most efficacious. It is well known that in aguish districts iron in different forms is popularly employed to a great extent in attempting the removal of the splenic ague-cake; and where this mineral is combined with suitable evacuation, and its tonic effects without its astringency are obtained, it is highly beneficial, and often under its use the symptoms disappear. If fever or much pain be present, it is recommended previously to take blood from the arm, or deplete locally by means of leeches, or to employ the latter means along with the chalybeate and cathartic combination, and to augment the latter by the addition of a large proportion of jalap, or some gamboge.

Attention to diet and restraint in the article of food, is not less indispensable in effecting the removal of splenic than that of hepatic disease. Practitioners do not always seem to be aware of the importance of attention to this particular, and forget that, without making the food of the lightest possible nature sufficient to nourish, all mere medical treatment is unavailing. The only safe food in such complaints is that obtained from the farinaceous ptisans, as barley-water, rice-water, gruel, &c. with a small proportion of the solid farinaceous articles, without milk, which is almost invariably injurious in the early stage of splenitic enlargement. Oleaginous or fat articles of food are equally pernicious.

In the chronic forms of this disorder, the enforcement of the dietetic rules is still more imperative; and their effect is recommended to be promoted by the occasional application of leeches to the left hypochondrium, the moderate but steady employment of purgatives, blisters or issues over the side, and the warm support of a broad flannel bandage. Afterwards, when the symptoms of the disease appear to be subsiding, and to require tonics, the patient is directed to take ten-grain doses of the black salt,—a combination of sulphuret of iron and muriate of soda and lime, and the powder of the small black Myrobalan, in daily doses of twenty grains. For an account of this remedy, we refer to the therapeutic department of the present number.

In this form of the disease also we perceive the author properly attaches some importance to the therapeutic properties of the tincture of muriate of iron, and the vinous solution of tartarized iron, both active forms of administering this remedy.

Some interesting information is communicated on the remedies employed by the people and their Hakeems on the native treatment of splenic disorders and enlargement. The most usual are combinations of sulphate of iron, garlic, and aloes, with small doses of castor-oil, tincture of garlic and aloes, iron filings, and oil of mustard-seed, sulphate of copper, and acupuncture of the left hypochondriac region, so as to penetrate, if not transfix, the spleen, and the actual cautery over the hypochondriac region.

The practice of acupuncture has been adopted by Mr Twining, who admits its beneficial effect, and thinks that it "may depend on a degree of local inflammatory action, being followed by effusion of lymph, which on absorption effects a permanent decrease of the spleen."

> "I have in chronic cases," says Mr Twining, "inserted two, three, or four needles deeply into the substance of the spleen; the needles were introduced exactly two inches, and no unfavourable symptom has ever followed the operation: the effects were deemed by those gentlemen who witnessed these operations useful in accelerating the absorption of the enlarged spleen; but the patients were at the time taking the usual remedies. Two men now in Hospital, Pereira and Guthrie, have each had the spleen repeatedly and deeply punctured: they are recovering, and I think the spleen in each has diminished more rapidly since the operation than for three or four weeks previously. We have yet to ascertain at what stage of the diseased spleen the affected organ is likely to derive benefit from being punctured by needles. In some periods of the early stages of the vascular engorgement, we have reason to believe that adhesive inflammation, or a healthy process, is not very likely to follow local injuries, by operation, or otherwise."—P. 333.

The validity of this explanation we doubt. If the needles produce inflammation, then they ought rather to aggravate than to abate the disease. Is it not more reasonable to imagine that, being employed at a stage of the disease when active inflammation is over, and when the vessels still distended are relaxed and void of tone, and when the circulation is slow and almost stagnant, they may, by slightly exciting the vessels to contract, produce some motion in their contents, and thus enable them to transmit the languid and stagnant stream of blood in its legitimate direction, and by the gradual increase of this motion of contraction, restore at length the splenic vessels to their natural and healthy diameter, and their blood to its natural motion?

The use of mercury in the treatment of any of the diseases of the spleen, Mr Twining condemns, without any hesitation or qualification, as highly injurious both to the morbid organ, and to the constitution in which it has taken place. The reason assigned for this exclusion of mercury is, that, though ulceration and sloughing of the gums and oro-buccal membrane are very liable to take place spontaneously in disease of the spleen, they are much more likely to ensue in those cases in which the system has been made to feel the general influence of mercury. The evils induced by this practice are described in a very vivid manner by Mr Twining, and cannot be too carefully guarded against.

The disease first indicates itself by swelling at the orifice of the parotid duct, the aperture of which being obstructed, ulceration at its extremity causes the *saliva* to be injected into the cellular tissue of the cheek, so as to form, in the course of a single night, a glossy semitransparent swelling as large as a small orange. This ulceration is followed by sloughing of the buccal membrane and contiguous tissues, which are ejected, and expose the molar teeth and the throat. In other cases, the ulcerative process spreads over the oral mucous membrane till it reaches the *prolabium* and skin, when a patch, assuming the inflammatory action very speedily becomes black and is mortified, exposing the incisors and small molar teeth. In another description of cases, which are designated as of slower progress, the maxillary periosteum is extensively separated; the teeth drop out or are ejected from the *alveoli;* and caries of the bones of the face and exfoliation of the jaw-bones ensue. All these evils from the employment of mercury, Mr Twining ascribes to the subjection of the system to that mineral, while it is at the same time under the influence of splenic *cachexia.*

These evils, which do not admit of perfect cure, may be alleviated by the employment of soothing, astringent, and sedative remedies, with a mild diet sufficient to sustain without stimulating. The local application of the undiluted nitric acid is represented by Mr Twining in some cases to have been eminently beneficial in checking the progress of the ulceration.

On the subject of the administration of mercury during fevers, in which the spleen becomes suddenly enlarged, the following observations may be perused with advantage by those who trust to this mineral as a specific for febrile disorder and local congestion.

" Several years ago, I undertook an inquiry relative to the remote effects of calomel, on patients who used that remedy for fevers, at the same time that they were affected with spleen disease. I allude particularly to patients who had taken calomel at the commencement of fevers, before it was discovered that the spleen was affected. A most patient and prolonged investigation was pursued relative to numerous such cases; in many of which I ascertained the state of health above eighteen months after mercury was used, and compared the reports on their condition, with the state of patients who had suffered from spleen disease, attended with extreme degree of impaired health, but used no mercury. I found that those patients in whom mercury had been administered during the existence of spleen disease, almost always had the health permanently impaired; in fact, a large number of them might be said to have broken and ruined constitutions: while those who were treated for similar diseases without the use of mercury, almost invariably recovered good health in Bengal."—Pp. 339–340.

This is another testimony added to the many already recorded of the injurious effects of exhibiting mercury in cases of the description now specified for the removal of the symptoms of acute disease. Every thing that experience teaches us regarding the effects of this mineral on the animal body, shows that, wherever there is organic change in the structure of parts, it is not only useless, but very pernicious. To show that this conclusion is corroborated by the testimony of Mr Twining in a very remarkable degree, we have only to add, that in cases in which enlargement of the spleen is combined with enlargement of the liver and biliary congestion, the most cautious administration of mercury in very small doses was followed by sudden and extreme exhaustion of strength, with ghastly sunk countenance, and every appearance of approaching dissolution. In short, Mr Twining has seen the most satisfactory and conclusive reasons for excluding from the list of remedies to be employed for the removal of splenic disease, all the forms of mercury given to affect the constitution, and disapproves entirely of the directions given on this point by Dr Davis, Mr Annesley, and others.

The fifth and last chapter of the work is devoted to the consideration of the nature and treatment of the fevers prevalent in India. These Mr Twining divides, like most other authors who have treated the same subject, into Intermittent, the Common Continued Fever of the hot season, the Remittent Fever of the Rains, and the insidious Congestive Fever of the cold season;—the peculiar characters of each bearing more or less accurately a relation either to the present or the preceding season.

The only characters proper to the intermittents of Bengal are the frequency and obstinacy of the visceral diseases with which they are associated, or to which they give rise; and after they have subsided a short time, there is scarcely an organ of the body which has not been more or less affected with deranged function, and eventually change of structure. In the early stages of these diseases, the stomach and the brain, and especially the cerebral membranes, are most usually more or less touched. The liver also may show symptoms of disorder before the paroxysms have recurred long. At more remote periods, the spleen, the mesenteric glands, the cellular tissue at the root of the mesentery and mesocolon, and even the lungs, become more or less affected with disease. The affection of the lungs, it is observed, is most frequent in hot dry weather.

Though these traces of disease of different organs are not invariably the concomitants or consequences of intermittent fevers in India, they are nevertheless so frequent, that it is absolutely necessary to be aware of the possibility of their occurrence, to detect their existence, and effect their removal, in order successfully to combat the ague.

For accomplishing this purpose, Mr Twining speaks in terms of commendation of blood-letting performed in the cold stage, to the extent of from twelve to twenty ounces in a European, and from four to twelve ounces in a Bengalee, preceded by a course of moderate purging, and followed by the use of sulphate of quinine, with decoction of cinchona in a mixture of the kernel of the kutkulega nut, long pepper, and assafœtida. The arsenical solution is represented to be effectual in slight cases principally. Particular attention to diet is also enjoined.

The Continued Fever of the dry hot season is distinguished by the suddenness of its attack, the intensity of its symptoms, and the early tendency to inflammations of particular organs, as the brain, stomach, and the cellular tissue round the duodenum and the root of the mesentery, and the liver.

As it is a disease most incident to plethoric Europeans recently arrived, its virulence always requires to be controlled and its progress opposed by means of blood-letting more or less copious, and repeated according to symptoms and its effects, the administration of cathartics, shaving the head, and depletion by leeches, and the vigorous employment of the antiphlogistic regimen. In cases neglected at the commencement, large doses of calomel are recommended, and even calomel and opium to induce ptyalism are permitted.

Remittent Fever has ever been the most dreadful, relentless, and insidious scourge of Europeans in Bengal; and to describe the characters, understand the nature, and control the ravages of this merciless disease, has occupied the talents of some of the ablest observers in our profession. The elaborate descriptions of Lind and Clark, and the more recent accounts of Mr Marshall, Dr Johnson, and Sir George Ballingall, render it unnecessary for us to follow the author in his account of this form of fever. It is sufficient to advert to his account of the pathological tendencies of the disease.

Mr Twining is convinced, from attentive clinical observation, conjoined with the morbid anatomy, that remittent fevers in Bengal are invariably connected with local congestions, which may run rapidly to inflammation, with interstitial effusion. The principal seat of these local affections are the stomach, intestines, and the cellular tissue round the duodenum, and at the root of the mesocolon; but they may also be found in the spleen, liver, brain, or lungs. Sometimes the brain and stomach seem exclusively, if not principally, affected; in other instances the spleen, intestines, and lungs, are most affected; and in others the liver is the prominently diseased organ.

In the treatment of this formidable disorder, Mr Twining trusts principally to the early, prompt, and active employment of the antiphlogistic method, so as by remedies to prevent the occurrence of those changes which are fatal to the continuance of life. General blood-letting, first followed by local bleeding from the head and epigastric region, the exhibition of efficient cathartics, and the employment of large doses of calomel, are the agents on the efficacy of which he relies most. Afterwards he employs the sulphate of quinine to prevent the recurrence of paroxysms. Tranquillity and the horizontal posture are also indispensable. A gradual return to farinaceous food, and even the use of wine, are found more early requisite and admissible than in the case of inflammatory fever. It is not in all cases of remittent fever, however, that the depletory system is admissible; and where the disease has been of some days duration, or has approached insidiously, or where the paroxysm is nearly over, blood-letting may be injurious, or even have fatal effects. In these circumstances great care and caution is requisite, and even local blood-letting by leeches should not be performed.

The *Insidious Congestive Fever* of the cold season is a disease not less dangerous and difficult to be managed with success. The symptoms are those of febrile irritation without local disorder, viz. general pains and weakness, dry skin, thirst, short breathing, easily rendered panting or laborious; scanty high-coloured urine, with slightly quick, but soft and weak pulse. As the disease proceeds, the bowels, previously bound, are still but scantily moved, and there is painful distension of the epigastric and hypochondriac regions. The countenance becomes livid and dingy, the surface yellow; and pain, though complained of over the whole body, is particularly felt in the seat of the absorbent glands, and along the course of the lymphatics. It is often only during the latter event, nay, during the latter three or four days of the disease, that the symptoms of languor and weariness become, so oppressive as to make the patient desist from his usual occupation, and confine himself to bed.

The appearances found are much the same as in other forms of fever; only in some cases abscess of the liver, and in others superficial ulcers of the mucous membrane of the ileúm, have been observed.

It appears to attack all persons indiscriminately; those in the best and most comfortable houses, as well as those in more humble and cheerless abodes, those of regular hours and temperate habits, as well as the irregular and prone to indulge, and women and children, as well as healthy-looking males. It appears from its symptoms, progress, and effects, to be of the nature of gastric fever.

If taken early, the most effectual treatment consists in blood-letting and the daily evacuation of the bowels by mild but efficient purgatives. If taken at a later period, general blood-letting may also be performed and required more than once; but afterwards local bleeding from the epigastric region by means of leeches is more applicable; and it is necessary to exhibit large and frequent doses of calomel and jalap, alternated with castor-oil and oil of turpentine in small doses. The obscure pain, weight, or uneasiness of the head is best alleviated and removed by removing the hair, and the application of leeches to the scalp, or even by means of general blood-letting. The tepid bath is allowed to be useful when the disease is giving way. Dietetic restrictions have great effect.

In some of the cases mentioned by the author, blisters applied to the head and sinapisms to the extremities appear to have been of very great service in extinguishing the disease.

The length into which we have entered in reviewing the contents of the present volume sufficiently shows the estimation in which we hold it. We will not conclude, however, without observing that, though it presents a few parts in which we might have exercised our censorial vein, its merits far outweigh its defects. It is the most important work which the Calcutta press has given to the medical profession; and next to the magnificent work of Mr Annesley, the most valuable furnished by the experience of our Indian brethren. Its importance consists in this, that it promises to establish a new era in the pathology and therapeutics of Indian diseases. While it presents nothing very new or unexpected on the nature and treatment of disease to intelligent physicians in this country, it removes at once a multitude of prejudices and misconceptions regarding the alleged peculiarities of diseases in India; withdraws the mysterious veil of DEBILITY in which the Indian practitioners had chosen to envelope the maladies of that burning climate; and discloses the fact, that fever and inflammation in India are not different from fever and inflammation in Europe, unless in intensity of action and rapidity of progress. It gives, we trust, the *coup de grace* to that deplorable system of blind and indiscriminate mercurialism, so dear to the feelings and recollections of the English practitioners in Bengal. It will impress on the rising generation of East India surgeons the necessity of directing their attention to the mitigation and extinction of inflammation by appropriate antiphlogistic means, and not by the pitiful system of alteratives, opiates, mercurials, and tonics. It will not fail also to prove the necessity of enforcing attention to dietetic measures, and of the practical application of the principle, that, in attempting the removal of disease, whether acute, subacute, or chronic, without restrained diet, medical treatment is inert and unavailing, while with dietetic restrictions medicine is invariably much more efficient, and becomes very frequently almost unnecessary.

ART. II.—*A Treatise on the formation, constituents, and extraction of the Urinary Calculus, being the Essay for which the Jacksonian Prize for the year* 1833 *was awarded by the Royal College of Surgeons in London.* By JOHN GREEN CROSSE, Surgeon to the Norfolk and Norwich Hospital, and Lecturer on Clinical Surgery, &c. 4to. London, 1835. Pp. 231. 29 Lithographic Engravings.

FROM the earliest period of the history of surgery, calculous complaints, and the means of relieving them by operation, have been favourite objects of attention in the medical profession. The afflictive nature of the symptoms to which such complaints give rise, excites a peculiar sympathy for the sufferer; while the necessity which their investigation and cure demand, of penetrating into the recesses of the body, exhibits such an example of the triumph of scientific knowledge, and mechanical skill, as has at all times been a subject of wonder and admiration with the public, and must ever be eminently attractive, and exciting to every surgeon of talent and ambition. Hence we find, not only that the highest anatomical knowledge has been directed to the perfecting this operation; but that various mechanical means have been from time to time suggested, in order to increase its facilities, and perhaps to offer, in some degree, substitutes for the absence of that minute acquaintance with the anatomy of the parts, without which no important operation should be attempted.

No greater proof can be given of the fortunate application of such knowledge to operative surgery, than that Cheselden's lateral operation remains to this day unchanged; and that with the mind of a discoverer, and benefactor of mankind, that great man should have been able, from nothing more than the vague and uncertain information bequeathed to the world by Frere Jacques, and Rau, to place on scientific grounds, the principles on which that operation was to be performed, and by this means rescue it from empiricism and empirics. Notwithstanding, however, the solid basis on which the operation of lithotomy stands, and the hopelessness of doing much in its improvement, yet, in many matters of detail, the good surgeon and accurate observer may be able to confer much benefit on the profession; and we are therefore happy in finding that the subject has received the attention of a gentleman, who, by his connection with the Norfolk and Norwich Hospital, possesses more than ordinary opportunities of practising this operation; and who, at the same time, is favourably known to the public, by anatomical skill, and by zealous and successful exertions in the cultivation of the profession.

The Prize which the College of Surgeons of London annually awards, and which, upon the present occasion has been adjudged to Mr Crosse, affords an excellent incentive to the members of that body, to examine, in succession, all the most important parts of surgical disease; and, at the same time, offers the young surgeon an opportunity of coming before the public, if not as an original writer, at least as a correct and careful observer, and a discriminating and judicious exhibitor of what others may have done.

The author commences with observations on the causes of urinary calculi, and an account of their chemical and mechanical composition and growth. He then passes to the consideration of calculi in the kidneys and ureters, with their pathological effects; and to that of calculi in the urethra and prostate gland. He afterwards returns to the subject of calculi in the bladder, and goes on, in successive chapters, to the consideration of sounding; of removing calculi through the urethra; of breaking the stone in the bladder; of the operation of lithotomy, and of the treatment after the operation, and particularly of hemorrhage. He concludes his work by an appendix, in which he gives various cases of lithotomy; the results of operations for stone in the Norfolk and Norwich Hospital, and many important calculations connected therewith; and an ample reference to most of the express treatises upon gravel, stone, and lithotomy, published in different ages and countries, and to the essays or notices connected with these subjects, in many periodical and other works. The treatise is illustrated by twenty-nine very good lithographic plates, two of which refer to urinary vesical calculi; twenty-five to various diseases of the urinary organs; and two to instruments employed in sounding; in the extraction of calculi from the urethra; and in the operation of lithotomy.

We shall follow the author in the order which he employs in his treatise; and shall first give an account of his observations on the *causes of urinary calculi.*

He does not seem to consider this part of his subject as having any absolute or necessary connection with the terms of the prize question proposed by the Royal College of Sugeons; and yet, when the attention is directed by the College, to the "*formation,*" "as well as to the constituents and extraction" of the "urinary calculus," it seems to be difficult to conceive, that the term *formation* does not involve all those circumstances, whether external or internal, on which the disease may in any way be supposed to depend. The prevailing source of urinary deposits, the author mentions, as being dyspepsia, which leads to the generation of acid in the stomach, and to the superabundance of lithic acid in the urine. That disease, however, so often exists without the production of urinary concretions, that he considers it necessary, for the origin of the latter, that it should be united with other exciting causes, as want of sufficient exertion, variable climate, peculiar diathesis, or local disease in some part of the urinary organs.

Some descriptions of food and drink have a tendency to produce urinary deposits, independently of dyspepsia, as acids, to occasion those of lithic acid; and alkalies, alcaline deposits; yet the author agrees in opinion with preceding writers in thinking, that there are no circumstances of food, soil, or beverage, which can account for Norfolk being more disposed to calculous complaints than other parts of the kingdom. Minute observations, however, on the climate, he conceives, might better explain the matter; "and the great prevalence of a north-east-wind, and the frequent, sudden, and very considerable changes of temperature, acting upon persons already affected with the most prevailing disorders of the district, dyspepsia, scrofula, or rheumatism, cannot but be regarded, he thinks, as most powerful agents in giving rise to such frequent cases of gravel and stone. I have repeatedly known persons," he adds, "who were free from gravelly complaints whilst residing in the metropolis, affected by them on spending a few weeks in this country; and relieved, or entirely free from them, on a change of residence, although in each situation, they followed carefully the same diet." Instances of this kind, however, seem to us to depend on peculiarities hardly at all connected with a general increased disposition to the generation of urinary calculus; for it appears from one of the statistical tables given by Dr Yelloly, in his paper on the tendency to calculous diseases, * that there is as much disposition to such complaints in London, as in the county of Norfolk; though in Norwich the tendency is considerably greater.

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* Philosophical Transactions for 1829 and 1830. See Edinburgh Medical and Surgical Journal, Vol. xxxiii. p. 192, and Vol. xxxiv. p. 426.

Various local causes, as blows on the loins, which injure the structure, or derange the function of the kidneys, will often give rise to calculous deposits, as will inflammation of the pelvis of the kidney, or increased mucous secretion from the urethra. Strictures of the urethra, and enlargements of the prostate gland, by detaining the urine in the bladder, have a powerful tendency to produce disease on that organ, and therefore to favour the formation of calculous concretions; and these likewise prevent the ejection of small calculi, which, by detention, will form the nuclei of larger ones.

The author also mentions hernial displacement of the bladder, and sacculi formed in its inner membrane, as disposing causes to stone, and the introduction, likewise, of extraneous bodies into the bladder, around which, as well as any portions of blood or of lymph which may happen to be detained in it, calculous matter may form.

Mr Crosse alludes to the supposed rarity of calculous complaints in warm climates; but on this circumstance, some papers, which have recently appeared in the Transactions of the Medical Society of Calcutta, throw a certain degree of doubt.

In the next chapter, the author makes some observations on the chemical composition of urinary calculi; and gives the analysis of 100 specimens of small calculi, passed spontaneously by the urethra, which might be considered as likely to have formed the nuclei of larger ones, had they remained in the bladder.

These calculi confirm the established opinion, as to the great preponderance of lithic acid and lithate of ammonia as nuclei; but they exhibit rather more than the usual proportion of oxalate of lime. The author thinks he has discovered an error in the means of detecting this latter substance, in Dr Marcet's essay on calculous diseases, where we are informed, according to his statement, "that when a portion of the concretion is exposed to a *gentle* heat, the oxalic acid is driven off, and pure lime left." He likewise tells us, that the ready and proper method of ascertaining the nature of oxalate of lime, is to expose a portion of that substance to the spirit-lamp and blowpipe, when the oxalic acid is decomposed, and is converted into carbonic acid gas, which exhibits itself by the extrication of globules on the application of dilute nitric acid; the oxalate of lime having become carbonate, and requiring the application of an intense heat to render it pure.

On this subject, however, Mr Crosse has fallen into several errors and misconceptions. Dr Marcet does not speak of the effects of a *gentle* heat: his expression is a *red* heat; and though the first change produced by heat on oxalate of lime, is its conversion into carbonate, a *gentle* heat would not effect this. Brugnatelli, therefore, whose work on "Litologia Umana," Mr Crosse quotes in confirmation of his opinion, correctly observes, that, on exposing oxalate of lime to heat in a crucible, ("al fuoco entro un crogiuolo") it is converted into carbonate, and requires the application of intense heat to convert it into quicklime. But if Brugnatelli, with the author, doubts the power of the "flame of a spirit-lamp, urged by a common blowpipe," to produce, when properly used, an intense heat, far beyond what is conveniently applicable to a crucible, and quite equal to the conversion of oxalate into quicklime, he does not adequately appreciate its capacities. In point of fact, the flame of the blowpipe, whether from a spirit lamp, or from a wax or tallow candle, directed on a portion of oxalate of lime held by a pair of platina forceps, makes at once a partial, but not an entire conversion of the oxalate into quicklime. The result is, a mixture of quicklime and carbonate of lime; but there is enough of the former, to produce the usual changes on turmeric, and to form lime-water; though it is very true, that, unless much pains are taken to carry off all the carbonic acid gas, by the repeated action of the blowpipe, effervesence will be produced with any dilute mineral acid, which shows that the change into quicklime is not completely effected.

We therefore consider the usual tests for quicklime, as the most direct and appropriate for discovering the nature of oxalate of lime. But the author is under a great mistake, when he regards the employment of these tests as proper to Dr Marcet. That able physician only followed in his analysis, the precedent of every chemical writer of eminence on the subject, from the time of Fourcroy downwards. The following remarks by Professor Berzelius, who is one of the most recent, as well as the most able of our modern writers on chemistry, afford every confirmation to the opinion which we have here supported.

"If we heat by the blowpipe on a platinum plate, a deep-coloured concretion of oxalate of lime, it swells up, becomes charred, emits a smell of burned horn, and leaves, after the carbonaceous mass is successively reddened at a strong fire, a residue of quicklime, which may be slaked with water, and reacts strongly like alkalies without being dissolved."*

In the next chapter, the author treats of the *mechanical composition and growth* of urinary calculi. The *density* of calculi is greatest in oxalate of lime, and next in the lithates; and when the latter have a small admixture of the former, they become very friable, so as occasionally to break even in the bladder, of which the author mentions an example in a man of 70, from whom twenty-two portions of broken calculi were removed after death. The *progressive growth* of calculi is a matter extremely difficult to ascertain. In one instance, after twenty years existence, a calculus was found of only six drachms and a scruple in weight; but upon the whole, the author is disposed to think that in the lithic and mulberry calculus an augmentation of between one and two drachms takes place in a year. In the phosphates the increase is much more considerable.

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* Traité de Chimie, par J. J. Berzelius, Tome vii. p. 423.

For the increase to be regular, the stone must be moveable; for when it is kept in contact, from any cause, with the coats of the bladder, the augmentation will take place principally in the portion which is free to the access of the urine. Calculi, however, though they may be kept fixed by extending into the ureters or urethra; or by being grasped by the muscular fibres of the bladder; or contained partially in a sacculus, have never been found by the author to be actually adherent to the coats of the bladder, except through the medium of intervening lymph, easily broken through.

Renal calculi are occasionally found in the *tubuli uriniferi* of the kidney, but most frequently in the infundibular or pelvic cavities. Symptoms analogous to those which attend the passage of a calculus along the ureters may occur from a calculus passing through the narrow part of the *infundibula* to reach the pelvic cavity. The author found, on the dissection of a person who had suffered much in the loins from nephritic attacks, that there were numerous small calculi in the *calyces*, and some in the *pelvis* of the kidneys; but that in one of the *infundibula* there was a great contraction, which must have allowed a calculus to pass with difficulty. The pressure of a calculus, and the consequent obstruction to the course of the urine, may lead to irregular enlargements of the *infundibula*, and in time produce absorption of the mammillary processes, and of much of the parenchymatous substance of the kidney; but the urinary secretion can go on, when only a very thin layer of the glandular substance of the kidney remains. One ureter may be obstructed, and the function of the corresponding kidney lost without danger to the patient, or other inconvenience than pain; but when this occurs in both kidneys, the patient inevitably dies in six or seven days, with symptoms of effusion on the brain. The evils connected with renal calculi are not commensurate with their size, for a small one passing the ureter may give great pain, when one that is too large to pass may be little felt, though its ultimate consequences to the organ may be serious. Sometimes calculi in the kidney produce inflammation, which is one of their most serious consequences; but a large one often exists a long time in the pelvis of the kidney, without much danger to the patient, provided the urine can pass on to the bladder. The symptoms produced in this case are, dull heavy pain in the loins, extending sometimes to the *scapulæ*, at others over the *nates*, or to the groins and scrotum, and along the thighs; the urine is bloody after exercise; dysuria and frequent micturition occur, as if there were a stone in the bladder; and a muco-purulent secretion is formed from the lining membrane of the kidney, pelvis, and infundibula, and is discharged with the urine; but without the existence of ulceration.

Several interesting cases and dissections are given in illustration of the important subject of this chapter.

The author next treats of *urinary calculi situated in the urethra;* and of urinary *concretions in the prostate gland.*

Calculi which have quitted the bladder, and become fixed in the membranous or the prostatic part of the urethra, may acquire considerable magnitude, and procure a lodgement, partly in the urethra and partly in the bladder, by absorption of the prostate gland. Where their magnitude is not great, and they do not extend to the neck of the bladder, they may exist for a long period without much inconvenience, and therefore call for no operation; but where their removal becomes necessary this may be done "by a free external incision, carried down to the stone, in the usual situation of the lateral operation; and, by the scoop passed in on the pubic side, with the finger *in ano*, the surgeon may, if well acquainted with the situation of the stone, and assured of its not extending into the bladder, remove it with ease, expedition, and safety." When, however, a stone of considerable size is situate immediately behind the bulb of the urethra, "if the finger *in ano* can be carried beyond it, so as to press it forward in the *perinæum*, it may be removed by a semilunar incision, like cutting on the gripe." Sometimes a spontaneous exit to calculi takes place from the perinæum by absorption and ulceration; and sometimes the calculus may make its way from the urethra into the contiguous cellular membrane, and thus into the scrotum, from which it may be readily removed by incision.

Prostatic calculi are formed in the ducts of the prostate gland, and consist of phosphate of lime, with which, however, according to the experiments of Dr Yelloly, there is always a mixture of carbonate. It is only when they attain considerable size, or project at the orifices of the prostatic ducts, or escape into the *urethra*, that they occasion inconvenience. The existence of stone in the bladder, by its tendency to produce inflammation of the prostatic portion of the *urethra*, and thus to interrupt the free exit of the prostatic secretion through its appropriate ducts, disposes to the formation of prostatic calculi. The author supposes that, by escaping into the urethra, and from thence into the bladder, they may become the nuclei of vesical calculi; but this opinion does not seem to be supported by actual observation; for in no instances, mentioned either by the author or by others, has a prostatic ever been found to be the nucleus of a urinary calculus. A deposit very similar to the prostatic occasionally takes place in the veins of old people with prostatic enlargement and diseased bladder, and who have the veins about the bladder and rectum varicose. Meckel, Tiedeman, Otto, and Lobstein are mentioned by the author as having treated of these concretions; but they are noticed likewise by Mr Hodgson, we may remark, in his work on the diseases of the arteries and veins.

Calculi in the urinary bladder, and their pathological effects, form the subject of the next chapter.

The irritation produced by the existence of calculi in the bladder gives rise to chronic inflammation in its lining membrane, and to vitiated secretions, but very seldom to ulceration. Sometimes abscesses are formed in the thickened coats, from which matter may either find an outlet into the bladder, or into the peritoneal cavity, and prove destructive. A very common consequence of the irritation thus produced is the formation of small *sacculi*, or *herniæ* of the lining membrane between the muscular fibres, which, when once formed, go on increasing, and are sometimes found of considerable size. Small *sacculi*, the author states, are met with in a great proportion of those who have long laboured under stone; but large ones are very rare. They may likewise be produced by the irritation arising from strictures, which last form a very serious complication with calculus, and very often give rise to the disease. When a calculus has existed long, and the symptoms are severe, and particularly when it is attended with stricture, or enlarged prostate gland, the kidneys are very apt to become involved in the complaint; the severe dysuria, causing enlargement of the ureters from distension of the retained urine, and inflammation extending along them, even to the kidney itself. "The pelvic cavities, also," says the author, "become altered in shape, and enlarged; the *infundibula* extended or unfolded, and the lining membranes of all the cavities thus acted upon from repeated attacks of inflammation, is thickened, and furnishes a catarrhal secretion. The parenchymatous substance of the kidney is more or less absorbed; the mammary projections are obliterated; spurious hydatids occupy the cortical part, and all the serious evils, ulceration, contiguous abscess, or gangrene, described in speaking of calculi in their organs, are met with as sequela (*sequelæ*) of the vesical calculus."

Considering the great importance of *sounding*, the author very properly devotes a large space to the consideration of this subject, in which he comprehends all the collateral modes of obtaining information, not only as to the actual presence of a stone or stones, but with regard to their size, situation, mobility, and texture. He strongly dissuades the surgeon from frequent and indiscriminate sounding, as being always productive of great irritation, and sometimes of inflammation, and its alarming or fatal consequences. It occasionally happens, that the existence of tumours in the bladder will give rise to symptoms resembling those of stone; and in this case sounding is highly injurious. The author narrates an interesting case of this description of disease, of which the following is an outline.

A boy, of about a year and a-half old, had many of the symptoms of stone; but the author was unable, by the most careful examination, to satisfy himself that a stone existed, though he felt a tumour of some magnitude *per anum*. Another practitioner of much experience thought he felt a stone; and as the child's sufferings were exceedingly great, and he was evidently sinking under the painful disease, an operation was determined upon when he was about two years old.

The professional gentleman above alluded to still was of opinion that he felt a stone, though the author could only feel a resisting body at the left side of the bladder, about the termination of the left ureter. The operation was proceeded with; but as soon as the author cut down upon the staff, and opened the membranous part of the urethra, a semitransparent mucus appeared in the wound, which led him to imagine that he might have wounded the rectum. On carrying the scalpel forward into the bladder, with the assistance of his fore-finger, guided by the staff, the wound became instantly filled with a mass "resembling, on this sudden view," as the author describes it, "what one would have expected to see, had I opened the peritonæum, and allowed the *processus vermiformis*, and several folds of the small intestines, to protrude; such was the momentary frightful impression that held the mute attention of myself and all who were present." On pushing back the protruded parts, and carrying his finger into the bladder, he could feel no stone, but found the cavity filled with soft tumours, with a firmer substance near the orifice of the left ureter. These tumours were connected like grapes, were some of them more, some less transparent, and adhered to each other, and to the inner surface of the bladder, by means of a loose membrane. They resembled in firmness, appearance, and structure, the mild polypus of the nose.

Many of these tumours were removed by excision, having been brought, by the child's straining, so low as to be readily accessible; but more of the diseased structure remained behind than had been removed. The little patient died in forty-eight hours; and, on examination, the ureters were found enlarged and contorted; the pelvis of each kidney increased in size; a small cavity filled with pus in the cellular membrane at the fundus of the bladder; and the cavity of the bladder occupied by tumours, some of which were of the character above described, and others near the neck of a wart-like texture; but all of them were covered with a proper membrane, continuous with the inner coat of the bladder. The neck of the bladder, and prostatic portion of the urethra, were much dilated, and allowed some of the tumours near the neck of the bladder to project into them.

As an exemplification of the importance of obtaining every possible collateral information previously to adventuring on the operation, the author states his having personally known eight cases in which a stone was expected, but not found; and he mentions many surgeons of the first eminence, particularly Cheselden and Dessault, to whom the same circumstance occurred. He quotes Mr Benjamin Bell's Surgery for the fact of Cheselden having been thrice disappointed in his expectation of finding a stone; but Mr Bell gives this as *a report*, not as a circumstance depending on authority; and as it is not stated by Cheselden himself, who was as distinguished for candour as for skill, we are inclined to be of opinion that it is without foundation. The author gives many useful practical directions for employing the sound, which should be used in every posture of the body, and state of the bladder; and should be aided by examination *per anum*, and sometimes by vesical auscultation, through the means of the stethoscope. He notices with judgment the various shapes of this instrument, and reprehends the insertion of the maker's name on the handle, as interfering with the propagation of the nice impressions which a polished surface is best calculated to give to the perception of the examinator.

The removal of vesical calculi through the urethra, according to the valuable suggestion of Sir Astley Cooper, by means of Weiss's forceps, is a subject of great interest, and requires much attention and skill to determine on its practicability. The existence of calculous symptoms for a short period only, and particularly the tracing it a little time previously, through the urethra into the bladder, afford a presumption that a calculus is a small one; so does an audible click on examination, and the sudden occurrence of retention of urine, and pain after complete freedom from inconvenience for a day or two.

But if pressure above the *os pubis*, when the bladder is empty, produces a shooting pain in the *glans penis;* or if the patient feels something moving in its cavity on turning in bed, when urine occupies the bladder; or if change of posture from the horizontal to the erect, produce a smart pain in the *glans penis* and neck of the bladder; or if the concussion of walking or riding occasion pain in the glans, or render the urine bloody; and particularly if, on sounding, there is produced the sensation of a dull noise, firm resistance, and considerable extent of surface touched, it may be fairly inferred, that the calculus is too large to be removed by the urethra.

The operation of breaking down the stone in the bladder, which forms the object of consideration in the next chapter, has not received much of the author's attention, though he very highly estimates the advantages deriveable from this practice, and the skill employed in providing the means for effecting it. He is of opinion, that "the construction of the instruments for this operation is so complicated, and so much delicacy and tact are needed for their safe employment on the living subject, that they are scarcely employed by any save those who dedicate their time and attention almost exclusively to the undertaking." This we believe to be the fact, and we lament it; for the proper merits of lithotrity can hardly be adequately ascertained, till the regular surgeon feels it to be his duty to acquire the habit of employing this remedy, as one of the curative processes which he is required professionally to exercise on every proper occasion. Till this is the case, the surgeon and lithotritist will be continually in collision as to their respective departments, and can scarcely be expected to form a candid and dispassionate estimate of the circumstances in which the operation of lithotomy can be dispensed with. The surgeon will be tempted to believe, that, in declining an operation, he is committing the dignity of the profession, or compromising his own reputation for skill; and that, in consigning his patient to the lithotritist, he is surrendering to the mere mechanist a legitimate province of his art. The latter, on the other hand, has no hold on regular surgery; and will be often tempted to tamper improperly with cases rather than decline them. We regret, therefore, that our British surgeons should not have made lithotrity more an object of their particular study and practice than has hitherto been the case. An elderly person may perhaps find the nicety of a mechanical process difficult in the acquirement; but we see no reason why a young or middle-aged practitioner should not put his shoulder to the wheel, and acquire the tact of this operation, just as so many have eminently done in the diseases of the eye. From the discussions which have taken place during the Competition at Paris for the Chair of Clinical Surgery, and which we have had occasion to notice in a late article,* it would appear that the system of lithotrity has not, in that metropolis, been attended with the success which had been anticipated from it.

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* Blandin, Edin. Medical and Surgical Journal, Vol. xliii. p. 216 and 224.

The tenth chapter is occupied in the consideration of the *operation of Lithotomy*, or of *Cystotomy* or *Lithocystotomy*, as the author has chosen to denominate it. The operation above the pubis, and that by the rectum, are suited only to a few peculiar cases; and the author therefore confines his remarks to the lateral operation. Sometimes it may happen, but not frequently, that the size of a stone may be too great to permit its extraction; but he is unable to state what magnitude of calculus it is impracticable to remove, as he has one by him of 14 oz. in weight, which was successfully extracted, and the patient lived five years afterwards. A full-sized curved staff, of sufficient length to project an inch or two into the bladder, is introduced, and the operator, feeling the staff in contact with the stone, inclines its handle a little to the right, in order that the curve may prevent on the left side of the raphé of the perineum, before it is handed to his assistant, on whose steadiness, attention, and perfect co-operation with the views of the operator, very much depends.

The following is the author's description of the different steps of the operation:

"The external incision through the skin and adipose substance, down to the superficial fascia of the perineum, should invariably be large, and be made to the full length and depth at one stroke of the scalpel, beginning a very little to the left side of the raphé, at the root of the scrotum, and beginning in an oblique direction, midway between the *anus* and *tuber ischii*, passing the level of the *anus* near an inch. This free external incision can bring no danger, the arteries wounded are superficial, and easily secured if required; the only objection that can be raised to so extensive an incision is, that the larger wound will less quickly close; but it is well known, that whenever the wound long delays to close, it is the deeper part that fails from some cause to heal, and not the superficial wound. By a free external incision you facilitate all the rest of the operation, getting at the deeper parts more distinctly, and, (what is of great value in operating in the adult, particularly where large and corpulent,) diminishing the apparent depth of the neck of the bladder, by calculating it rather from the superficial perineal fascia, than from the external surface of the perinæum.

"The next or middle incision, to be made by the common scalpel, should be of much less extent than the outer incision, answering to its middle third, and taking the same direction: it is intended to divide the superficial perinæal fascia, the posterior part of the *accelerator urinæ*, and the left transversalis muscle, baring the staff in the membranous part of the urethra, just behind the bulb; you therefore employ the left fore-finger to feel for the staff, and to press the rectum out of the way, that it may not be wounded.

"The third stage of cutting into the bladder with the scalpel is the most difficult, wherein you cut through the *levator ani*, lay open the remaining portion of the membranous urethra, and make an oblique section outwards and downwards, of the left lateral lobe of the prostate gland, all which you accomplish by passing the knife on in the groove of the staff, supported by the fore-finger of the left hand, and by enlarging the section of these parts in the same direction, downwards and outwards, as you withdraw the knife. This third stage of the operation, I have found from ample experience, very difficult to execute upon the curved staff, owing to its being held obliquely to present the groove favourably, and its receding from you in two directions."

The blunt-beaked gorget is then introduced as a conductor to the forceps, and also as a dilator of the neck of the bladder. "You withdraw the staff as soon as the gorget is introduced, and then pass the left fore-finger upon its concave surface into the bladder, and endeavour to feel the stone; the finger, at the same time, serves to dilate somewhat the neck of the bladder." An appropriate pair of forceps must then be introduced, rough in the interior, but not furnished with teeth, and not meeting at the ends, lest they catch hold of the coats of the bladder. The forceps having reached the bladder, the gorget is of course to be withdrawn, though the author omits to say so; and then the blades are to be opened, and the cavity of the bladder is to be swept with them, in order to feel for and lay hold of the stone; or the closed forceps may be used as a sound, feeling in all directions till the stone is capable of being laid hold of. The extraction of the stones, the author states, requires much "feeling and judgment, and should be done quietly, patiently, and thoughtfully;" guarding against the use of more force than the lining soft parts can bear without injury, and pulling with the forceps from side to side, or downwards and upwards, by a movement similar to delivering with the forceps in a case of midwifery. If the resistance is too great, the resisting parts ought to be cut through with a curved probe-ended bistoury, close to the stone, "obliquely downwards and outwards," until the necessary liberation takes place; and this the author considers as much better than to make a large and deep wound unnecessarily. Gentleness and precision, the author very properly advises, should be studied rather than great expedition; and thus there is the best chance of having a safe, though there may not be a "rapid and brilliant operation." "Le Cat cut about half a dozen patients in twice as many minutes, and it is said, lost nearly all of them."

But the author is of opinion that the straight staff, with a second handle at right angles to the usual one, is better adapted in every way to the operation than the curved one. It lifts up the membranous part of the urethra from the rectum, and thus affords greater protection against wounding the latter, while it allows much greater facility in cutting into the bladder, by carrying on the knife in the groove, as along a common director, passing the prostate gland, and entering the bladder; and enlarging the incision in withdrawing the scalpel. In operating, however, upon the straight staff, "you withdraw it, as soon as you have cut into the bladder, before introducing the finger into the wound." But is this without the previous introduction of the blunt gorget, according to Mr Key's plan, or with the employment of that instrument as a director to the forceps? There is not perfect precision in the statement; but at any rate, the staff is withdrawn before the finger is introduced by the wound, in both the one case and the other.

The two concluding chapters of the work respect the *treatment to be pursued after the operation of lithotomy*, and particularly as concerns *the occurrence of hemorrhage*. In regard to the former, the patient should be kept as dry and clean as possible, and no means employed to close the wound. The first favourable sign is the urine flowing freely through the wound; but if this should not be the case, and uneasiness and tension be felt in the region of the bladder, an elastic gum or silver female catheter must be carefully introduced by the wound, and left for a few days, so as to conduct off the urine. An unctuous dressing is soon all that is required to the part; and when the urine flows freely, and without pain, by the penis, adhesive plaster and a T bandage will expedite the closing of the wound. Inflammation of the bladder supervening on the operation, requires active local and general antiphlogistic treatment; but the most frequent cause of a fatal termination after lithotomy is infiltration of urine, with diffuse inflammation of the reticular texture, which is a very insidious occurrence, and when superficial, is best treated by timely free incisions. The antiphlogistic treatment, unless at a very early period, does no good. It may be proper to mention, that the best means of obviating this occurrence are found in the use of the tube originally employed by Frére Côme.

Peritoneal inflammation sometimes happens after the operation, and requires the usual treatment; but is most formidable when connected with diffuse inflammation of the reticular texture. Patients sometimes die from nervous exhaustion; and where every thing has gone on well, the perineal opening may heal slowly, and give rise to much difficulty. When it is fistulous and lined with a cuticular membrane, it may require the lunar caustic, or even the actual cautery.

A wound of the rectum is a very distressing evil; and though it rarely endangers life, it renders it burthensome. A recto-urethral fistula disposes much to a recurrence of calculus.

With regard to *hemorrhage*, the venous seldom affords ground for alarm; and arteries of the adipose substance, unless the patient is feeble or aged, may, when wounded, be generally allowed to contract of themselves.

In the second stage of cutting into the bladder, arteries of some size are occasionally divided, which require taking up, and may for this purpose call for the exposition of the wound, when hemorrhage occurs after the patient is put to bed. When a ligature cannot be applied to a bleeding vessel, a gum elastic cannula must be introduced through the wound, and the latter plugged up with dossils of lint placed round the cannula.

Sometimes the finger may be introduced into the wound, and curved, so as to press the internal pudic artery against the ramus of the ischium; and this, when continued for several hours, may successfully restrain the hemorrhage.

The wounded *corpus spongiosum* may be secured by pressure and dry lint, and does not afford an alarming bleeding.

The internal pudic artery itself may be wounded in the third stage of cutting into the bladder, and must be secured by a ligature both above and below. When the wounded arterial branch is situate deeper than the *levator ani*, the left internal pudic artery may be compressed, to see whether the hemorrhage is restrained; and if not, the only remaining resource is pressure in the deep part of the wound by means of plugging; but plugging is in all cases the source of much danger. Hemorrhage from the divided prostate gland, or from the injured lining membrane of the bladder, is seldom serious; and the secondary hemorrhages mentioned by old writers on lithotomy, as occurring on the separation of sloughs a week or two after the operation, are now very uncommon, owing, perhaps, to the greater gentleness, and better method with which the operation is performed.

With regard to the mortality which attends the operation of lithotomy, as described by Mr Crosse, he mentions that, at the Norfolk and Norwich Hospital, " the last thirty-eight male patients thus operated upon by the present surgeons," Mr Dalrymple, Mr Norgate or himself, " have all recovered." This is, however, a kind of estimate which is by no means satisfactory; for Mr Crosse remarks, that though the late Mr Martineau operated eighty-four times in succession, with the loss of only two patients; yet that the next two publicly operated upon by him, both died; and we know from Dr Yelloly's paper, that Mr Martineau's general average mortality was about 1 in 8. In the very valuable register of the Norfolk and Norwich Hospital cases, which is given in Mr Crosse's appendix, it appears, that though the last mentioned thirty-eight cases were all of them successful, yet the preceding thirty-eight had 8 deaths, and the 5 next series of similar numbers, 5, 6, 3, 4, and 5 deaths respectively. This register exhibits likewise a remarkable uniformity of result throughout the whole period to which the register extends, and gives several examples of from twenty to thirty operations taking place, without a single death, notwithstanding the general average of the mortality amounts to about 1 in 7½.

Before we conclude this article, it remains for us to say a few words on some points of criticism. We were amused with a mode of expression which occurs more than once in the work of Mr Crosse. We must say, that when we saw it first stated at p. 23, that the pulse *were* only 60 in a minute, we set this down as a correction which a cockney compositor must have made, in accordance with some parts of his well known indigenous phraseology. But when we find it again stated, at p. 146, "that the pulse *were* only 60," at p. 148, "that the pulse *were* again 80;" and at p. 151, "that the patient's pulse *were* 66 before the operation; and four hours afterwards, that *they were* 70 only;" we are constrained to consider this mode of expression as intended on the part of Mr Crosse. We are aware that some medical writers, in an affectation of classical accuracy, conceive it right to adopt the practice of Celsus and other Roman authors in using this term in the plural rather than in the singular; "ubi venarum exigui imbecillique pulsus sunt." Lib. iii. xix. But if this be the reason of the practice observed by Mr Crosse, we must observe, that writing good pure English does not require the adoption of Latin idioms; and unless English medical and surgical authors can imitate Celsus in other respects than peculiarities of expression, the imitation is worse than useless; it is injurious.

We have already alluded to the substitution which Mr Crosse makes of the terms *cystotomy*, or *lithocystotomy*, for the established one of lithotomy; but for this we see no sort of reasonable ground. We have only to observe, that, though this innovation in nomenclature was attempted long ago by Deschamps, yet the extensive knowledge, accurate learning, and high celebrity of that surgeon were inadequate to carry it into effect. Mr Crosse admits, that "custom has long consecrated and brevity recommends," the word lithotomy; and we therefore derive from its employment, all the assistance which language is expected to afford in communicating ideas. We do not quarrel with the accredited word *artery*, because it originated under the erroneous assumption, that it belonged to a system of vessels which conveyed air instead of blood; nor should we be warranted in rejecting the well understood term *hydrocele*, from its not pointing out, in its strict etymological formation, the precise position where the water is lodged, though hydro-scroto-cele, or hydro-ischo-cele, or some other such cacophonous combination, might do so. Changes in nomenclature are not justified by any fancied ideas of precision. They overturn usual associations, and frequently, as in the present case, without correcting any inaccuracy; for lithotomy signifies cutting for the stone, as well as either of the terms substituted for it; unless, indeed, we go back to Ammonius, and apply it alone to lithotrity, according to its original signification. But Λιϑος and *calculus*, must both of them be put aside, if we wish to communicate, by means of some particular designation, any correct notions of urinary concretions.

The cases which the author has introduced into his appendix, and which are twenty-two in number, will be perused with interest. They illustrate well many of the points of which he treats, and give a favourable impression of his judgment, energy, and skill.

ART. III.—*An Inquiry into the Nature and Properties of the Blood in Health and in Disease, by the late* CHARLES TURNER THACKRAH. *A new and enlarged edition, arranged and revised by* THOMAS G. WRIGHT, M. D., *to which is prefixed a Biographical Memoir of* MR THACKRAH. 8vo. London, 1834. Pp. 246.

THE history of the work before us may be given in a few words. Sir Astley Cooper, with the laudable desire of stimulating his pupils to exertion, was in the habit of annually proposing a prize for the best dissertation on a given subject. That proposed in 1817, for the ensuing year, was "the blood." At that time, Mr Thackrah was pursuing his studies in London, and as his attention had been previously directed to the subject, he became a candidate for the honour. In 1818 the prize was awarded him; and, encouraged by the flattering terms in which the essay was noticed by Sir Astley Cooper, Mr Thackrah set about preparing it for publication, by supplying such deficiencies as want of time had in the first instance compelled him to leave. On its appearance in 1819, the Inquiry met with a favourable reception, which at once established the author's character as an acute observer.

The success which attended his efforts on this occasion stimulated him to fresh exertions. With indefatigable industry he applied himself to various branches of professional study, and amid the distractions of practice and the education of his pupils, found time to compose several papers, both of a popular and scientific nature, which added considerably to his reputation. At last appeared his excellent work, on the effects of arts, trades, and professions, on health and longevity, which has already been noticed in this Journal. The high esteem in which this work was held soon called for a second edition, and, accordingly, in the following year, it was reprinted in a new and improved form.

From this period till his death, which occurred in a few months afterwards in May 1833, Mr Thackrah was engaged in preparing a new edition of this Treatise on the Blood, and, regardless of bodily suffering and the entreaties of his friends, continued his exertions till he sank exhausted by disease. His last wish had been to complete this his favourite work, but the fulfilment was denied him, and the task was bequeathed to one of his pupils, whose modesty made him shrink from the undertaking. In these circumstances, the duty devolved on Dr Wright, who encountered no little difficulty in arranging the materials entrusted to him. The task, however, he has executed in a highly creditable manner, and the treatise, as it now stands, appears to us to be the best on the subject. Having premised this by way of preface we proceed to notice the work itself.

The volume, besides the editor's preface, and biographical notice, contains nine chapters and an appendix. The first three, consisting of a statement of the different views entertained by physiologists and chemists regarding the general properties of the blood, its chemical qualities and coagulation, we shall pass over, as, though highly interesting, they do not admit of condensation. The substance of the fourth chapter, on the cause of the blood's coagulation, we shall lay before our readers.

The circumstances to which the coagulation of the blood has been attributed, may be reduced to four heads; 1*st*, its removal to a lower temperature; 2*d*, the action of the atmosphere; 3*dly*, rest; and 4*thly*, the loss of nervous influence on its removal from a living structure. The first does not merit any consideration, as a number of obvious facts, as well as the experiments and reasoning brought forward in support of the other theories, abundantly prove it to be untenable.

That the blood is coagulated by the action of the air was the opinion embraced by Hewson, who supported his views by the following experiment. A portion of the jugular vein of a living animal was included between two ligatures, air was brought in contact with the confined blood, and in a quarter of an hour concretion took place. Mr Thackrah attempted to repeat the experiment, but found it difficult to do so successfully. Granting, however, that the experiment could be performed readily, and always with the same results, Mr Hewson's inference would be far from being established. The air applied to the vessels may injure their vital energy, the current of blood is interrupted, and the coagulation might with as much reason be attributed to the loss of motion as to the action of the air.

There are, however, some circumstances which appear at first sight to support Mr Hewson's opinion. Blood coagulates with a rapidity proportioned to the surface over which it is spread, and this might with some show of reason be attributed to the atmosphere. In the buffy coat, the quantity of size is greatest when the blood has been abstracted in a full stream, and, as this phenomenon depends upon the slowness of coagulation, it might be inferred that the speedy concretion which takes place when the blood trickles down the arm is owing to its free exposure to the air. The following experiments, too, might seem to support the same view.

"Experiment xxxviii. A vial was filled with the blood of a stuck sheep, and the cork was immediately applied. During the day it remained a uniform mass, but next morning the serum was completely exuded."

"Experiment xxxix. Blood was received from the heart of an ox dead about twenty minutes. It was fluid, but on exposure to the air, concreted in two minutes fifty seconds."

"Experiment xl. Fluid blood was taken from the heart of an ox, dead above half an hour. Coagulation commenced in two minutes thirty seconds."

Now regarding the first experiment it may be remarked, that the air could not have been altogether excluded, and hence it does not prove that which it was brought forward to support. The other two seem rather to support the doctrine of coagulation being caused by loss of nervous influence, or withdrawal from the living texture, and the facts previously mentioned are more than counterpoised both by other circumstances, such as the blood being found coagulated in the vessels after death, and in mortified limbs, where the air could not have had access, and also by direct experiments, of which three are detailed. In the first air was forcibly blown into the jugular vein of a horse, which almost instantly expired, but the blood flowing from the body, though containing air bubbles, did not coagulate. In this experiment the quantity of carbonic acid gas contained in the air which was blown in may be supposed to have influenced the result; but the next is decisive.

"Experiment xlii. Into the jugular vein of a bitch was injected atmospheric air, from a half pint syringe. The blood after death flowed from the jugular vein, but coagulated on its effusion. Fifteen minutes afterwards the blood in the vessels, though fully mixed with the injected air, *remained fluid*."

From this we may safely infer that coagulation is not produced by the admission of air, and the following experiment will show that its exclusion will not prevent that from taking place.

"Experiment xliii. Blood was received into a vessel, the extremities of which were closed with stop-cocks: and, to prevent any connection with the atmosphere, a jet from the vein of an animal was allowed to pass through, before the lower end was secured: on the closure of the upper extremity, the vessel was immersed in warm water, yet in a quarter of an hour coagulation took place." Mr Thackrah hence infers, that exposure to the atmosphere is not the causes of the coagulation of the blood.

To ascertain how far this change could be attributed to rest, Mr Hewson placed two ligatures on the jugular veins of dogs, leaving the vessel *in situ.* Ten minutes after the operation the blood remained fluid, in fifteen minutes *coagula* could be detected on a careful examination, and at the expiration of two hours, clots considerably larger, though bearing a small proportion to the fluid in which they were found, occurred. In the experiment of Dr Hamilton mentioned by Crawford, which was similar to those of Mr Hewson, partial coagulation was found to have taken place in an hour.

To decide the matter, Mr Thackrah instituted several experiments, for the particulars of which we cannot afford space. The result, however, was "that where the current of blood was stopped in living vessels, concretion did not take place in five, ten, fifteen, twenty, forty-five, and sixty minutes, while the reception of the blood of the same animals, in the usual manner, evinced this process to commence in 2—4 minutes. The inference is obvious,—loss of motion is not the cause of coagulation."

In reference to the experiment of Hewson, Mr Thackrah remarks, that there is reason to believe that his opinions wavered in consequence of the contradictory results of his experiments. But even if these had been uniform, they would not have justified his conclusions. The minute coagula observed in careful examination, after the vein had been insulated for ten or fifteen minutes, may have been formed on the outside of the vessel, or at all events may have been the result of the after exposure of the blood. "If simple rest were the cause of coagulation, this agent and this only would be requisite; and the process would occur as readily when the blood is at rest in its vessels, as when effused from the body. If, on bleeding an animal, concretion take place in five minutes, and on confining blood in its vessels, the change commences not till ten, the mere loss of motion, it is manifest, cannot be the cause of coagulation. Why does not the suspension of the circulation in deliquium, drowning, &c. induce coagulation? Though motion is lost, fluidity is maintained, and these occurrences, therefore, corroborate the negative conclusion which the preceding observations induced."

It being thus shown that neither air nor rest by itself can produce coagulation, it remains to be ascertained whether that opinion be correct which refers the fluidity of the blood to nervous influence, and its concretion to the loss of that stimulus.

The circumstances which render this view plausible may be arranged under five heads, each of which we shall briefly notice.

1st, The disposition to concretion produced by the insulation of a vein, and the speedy coagulation of blood when removed from the heart of an animal, where after death it had remained fluid for more than twenty minutes, can be accounted for only on the supposition that nervous influence, or at least contact with a living texture, is necessary to the maintenance of the fluidity of the blood. In the first instance the vessel to which the ligatures were applied was thereby deprived in some measure of its vitality, and in the second we can easily conceive that some vital energy would remain for a considerable time in the textures of an animal suddenly put to death.

2d, This view derives considerable support from the fact, that the blood is found concreted in a leech which has died immediately after suction, while in the living reptile at the end of an hour, Mr Thackrah found no trace of coagulation.

3d, In most of the cases of the blood's fluidity after death, it will be found that the patient's death had been sudden, and occasioned by some affection of the nervous system, in which cases it is well known that many phenomena indicating the partial existence of vital energy are observed for some time after apparent dissolution.

4th, Fontana found that though the poison of a viper, when injected into the veins of a living animal, caused instant coagulation of the blood and the speedy death of the animal, it had no effect in producing that change in the fluid when withdrawn from the body. It is obvious, then, that, in this instance at least, the concretion was owing to the sudden destruction of the nervous influence in the heart and vessels, with which the blood came in contact.

5th, Mr Thackrah has proved by repeated experiments, that the rapidity of coagulation is proportioned to the debility of the system, to which may be added the marked effect of loss of blood in producing the same change. Now, as it is probable that the nervous system is the first to lose its excitability, we see that the two facts just mentioned materially corroborate the doctrine which it is Mr Thackrah's object to support.

The theory, however, does not rest on these grounds alone; for Mr Thackrah produces the more decisive evidence of direct experiments, performed both by Sir Astley Cooper and himself. In the first edition of this work, Sir Astley's experiments were incorrectly detailed, but in a note to the present, the editor has given them in the Baronet's own words, which we shall transcribe.

" Experiment I. Having carefully excluded the atmosphere from the ureter of an ox, I tied one end and put a cock on the other.

The cock was tied in the jugular vein of a dog, and being turned, the blood rushed into it. The cock was then shut, and the blood in ten minutes was found coagulated."

"Experiment II. The same experiment was repeated upon the jugular vein of the ox, which was, by the same means as the ureter had been, introduced into the jugular vein of the dog, and the blood coagulated in ten minutes."

"Experiment III. Two ligatures were placed on the jugular vein of a living dog, and there left for three hours: the blood had not coagulated."

"Experiment IV. Two ligatures were put on the jugular vein of a living dog, leaving a space between them of three inches. Then the lower part of the vein was cut through, and suffered to hang from the wound for four hours. The upper ligature was then removed, the blood admitted into the vein; and the ligature again tightened. The blood thus admitted into the dead vein was coagulated in a quarter of an hour."

Mr Thackrah made two experiments to ascertain the effect of the state of the vessel as to vitality in the coagulation of the blood, and the result was, that "blood confined in a vessel, which from the time vitality could not have deserted did not coagulate in an hour: while that inclosed in a lifeless vein was firmly concreted in one-fourth of that period." Several other experiments are given, but the result of the whole is, that "blood retained for the requisite period is found fluid in a living vessel, partially or irregularly coagulated in a semi-living vessel, and firmly concreted in one devoid of vitality." He therefore concludes "*that the vital or nervous influence is the source of the blood's fluidity,—and its loss the cause of coagulation.*"

The fifth chapter is principally devoted to an examination of the difference between blood from the *vena portæ*, and that from other veins. With the exception of Le Gallois, no other author has discussed the question of the identical nature of the blood in all parts of each of the two systems. Haller had remarked, that in the blood of the spleen, there was an indisposition to coagulate, while Dr Schutz of Fribourg found that it was quite as coagulable as other venous blood, if the stomach had not been previously injected with a quantity of fluid. The experiments of Steno and Malpighi led them to deny the existence of any difference between the blood of the *vena cava* and that of the *vena portæ*, while Saunders' examination of the vessels of the spleen and liver led to the same result. Le Gallois in 1803, came to the conclusion, that arterial blood is the same throughout, but that venous blood differs in different veins. Mr Thackrah's conclusions on this subject, from numerous well devised experiments, are,

1. That blood from the *vena portæ* has the appearance of defective elaboration, and that its colour is darker and more inclined to brown than to the modena.

"2. That portal blood concretes much more quickly than blood from other veins.

"3. That it contains a considerably larger proportion of serum.

"4. That the serum of portal blood, from the detention of colouring matter, is redder than serum carefully separated from the blood of other vessels; and that, from the same cause, it has a higher specific gravity; and yields on exsiccation a greater weight of solid matter.

"5. That portal serum, on the application of heat, concretes more quickly, but less completely, than jugular.

"6. That the crassamentum of portal blood does not expel its serum as fully as blood from other vessels, but remains a soft mass, unless artificial means be employed.

"7. That portal crassamentum contains a considerably smaller quantity of fibrine.

"8. That portal blood, in general, contains a much less proportion of albumen and hæmatosine than jugular."

The experiments of Mr Thackrah, moreover, convinced him "that there is a great difference in the state of the blood in different parts of the circulation, and consequently, that the general opinion is incorrect, which considers the blood uniform in every thing but colour." He suspects also, "that, if the contents of four or six large vessels in different parts of the body were examined, not two specimens would be found the same, or even nearly the same, in their constituents and proportions. * * * * * * Blood is a varying fluid. It varies every moment, even in the same vessel; and at no time can we obtain blood with the same proportion of elements from the vessels even of two same order and size. The current of circulation is like the stream of human life, incessantly pursuing its round, but as incessantly changing its elements. Sometimes much is thrown out of the blood by the secretions: sometimes much is taken up by the veins or lymphatics: and this contrast and variety are as applicable, I believe, to a single vessel as to the whole system. We at once see both the importance of this property and the difficulty which it presents to the physiological investigation of this chapter. No two blood-vessels will yield at one time a fluid precisely similar; and I conceive that ignorance of this fact has occasioned many of the errors and the discordant statements of experimenters on the blood."—Pp. 112, 113.

The sixth chapter, on the differences between arterial and venous blood, is compiled by Dr Wright, the editor. On this we shall not dwell longer, than to say that it contains a full and correct digest of the experiments and reasoning of the different authors and experimentalists whose attention has been attracted to the subject.

In the seventh chapter, on the *effects of different states of the animal system on the blood*, Mr Thackrah starts the question, "Is the milky or cream-like appearance which serum sometimes assumes dependent on digestion?" In the discussion of this question, we are surprised to find no allusion made either by Mr Thackrah or his editor, to Dr Christison's article in No. 103 of this Journal, where it is treated more fully and satisfactorily than in any other work with which we are acquainted. Begging to refer our readers to this, we proceed to give Mr Thackrah's views in his own words.

"Like other practitioners, I have often witnessed the appearance, but have not found it attended by any accordant peculiarity of constitution or disease. Dr Marcet's observations in the Medico-Chirurgical Transactions render it probable that the substance referred to is derived from the chyle of animal food. He deems it allied to cream; and Berzelius states that a portion he examined consisted truly of this fluid and albumen.[*] What chemical observation leaves doubtful, physiological experiment has established. We find in dogs, that when the lacteals are fully distended, this cream-like appearance is almost always presented in the blood. Indeed we can generally produce it at will, by taking blood a certain time after a full meal. Without adducing observations which run through a course of experiments on other subjects, I give but one example.

"Experiment clxvii. Four hours after a hearty meal, a dog was destroyed. The lacteals were found distended, and the blood from the jugular, portal, and caval veins presented a cream-like appearance in the serum."

"From such as this, contrasted with negative observations, we infer that *the substance mixed with serum is chyle not yet elaborated into blood.*"

Many considerations prevent us from agreeing with Mr Thackrah in the view which he has thus taken. We shall mention three. *1st.* The milky appearance is completely removed by ether, which possesses the property of dissolving the fatty matter. *2d.* It has been met with in an animal after a night's confinement in a box, when the blood the preceding evening showed no trace of it, and the animal had been allowed no nourishment in the interval. *3dly*, Milky serum has occurred under many different circumstances where "chyle not yet elaborated into blood" could not possibly have existed. Those readers who are desirous of investigating this curious subject, we would refer to the 7th, 17th, 19th, and 23d, volumes of this Journal,

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[*] "M. Raspail considers that this phenomenon is produced by the presence of an acid in the blood, which saturates the alkaline menstruum of the albumen, and hence it is precipitated from the serum. He remarks, that excess in the use of spirituous beverages or inflammatory action may give rise to this effect. Dr Babington gives the sp. gr. of milky serum 1019 to 1024, while the average specific gravity of healthy serum may be stated at 1029. In treating the blood with ether, by which he detected the presence of a concrete oil in the proportion of from two to four parts in 1000, (Is not this identical with the *graisse* phosphurée of Vauquelin, Chevreuil, and Denis? see p. 48,) Dr Babington did not find that the opalescence of the serum bore any relation to the quantity of unctuous matter obtained, but that the oil separated more readily from milky than from clear serum. He noticed also that in every specimen of the former kind, the albumen was remarkably deficient." Dr Wright's note.

Raspail's Organic Chemistry, Hewson, Dr Marcet in the Transactions of the Medico-Chirurgical Society of London, &c.

The eighth chapter, on the peculiarities in the blood in different classes of animated beings, is a transcript of the third chapter of the original edition, interspersed with the author's remarks, and such additional observations as the editor has met with in the course of his reading. It contains a number of facts of a very interesting nature, but from which, in the present state of our knowledge, no satisfactory conclusions can be drawn. We therefore content ourselves with pointing it out to our readers as a source of information on this subject.

The ninth chapter, devoted to the subject of the Blood in Disease, presents, from a variety of sources, a detailed view of the most important facts hitherto collected on this subject by pathologists. All that we can attempt at present is a concise abstract of the principal results.

A. *On the state of the blood in its vessels.*—1. Blood has been found in a certain degree coagulated even in the vessels of the living body by Haller. Slight coagulation takes place in mortification, and in consequence of the application of ligatures. Polypous concretions are conceived to be examples of the same change. On the cause of this phenomenon, the author differs from Andral, and ascribes the degree of organization which they present to the nature of the surface in which they are formed. These bodies Mr Thackrah regards as formed during life, because he infers that their formation must have occupied the space of several days, and he further thinks that, in a majority of cases, they are the immediate cause of death.

2. The *fluidity* of the blood in the vessels after death, in many cases of sudden death, he attributes to the fact of the unequal suspension of the great nervous functions, and the properties of the blood-vessels. In the ordinary modes of death, in which death makes its approach by successive steps, vitality is gradually and fully exhausted equally in the organic and animal system, or, in more explicit terms, the extinction of life in the nervous system proceeds at the same rate nearly with the suspension of vital motion in the vascular system. In the case of death by lightning, blows on the stomach, by poisons, or cholera, and in the case of animals hunted to death, he thinks the nervous system is killed more or less suddenly, while a sufficient degree of vital action lingers in the blood-vessels, independent of the brain, to maintain a degree of motion in them.

This explanation is not perfectly admissible, we think, in the case of the fluidity of the blood observed in animals hunted to death. The cause of the fluidity there seems to be quite different from that observed in death by lightning, or by the infliction of a blow on the stomach. When an animal is run to death, two orders of phenomena ensue. In the *first* place, the blood is prevented from moving through the blood-vessels with the same facility which it does when the animal is at rest, or taking moderate exercise; and its motion is progressively so much impeded, that it eventually remains unmoved in the vessels. *Secondly*, the blood is not permitted to move through the lungs and the pulmonary vessels so readily as it does in the state of quiescence; it is not thoroughly aerated or respired; it is at length prevented from moving almost entirely, and is almost completely unchanged by the atmospheric air, so that a particular form of *asphyxia* is thus induced. The two circumstances now specified are matters of fact; and it becomes a question whether they can be applied to explain the fluidity or semifluidity of the blood observed in animals run or driven to death. Is there not every reason to believe that one of the effects of perfect and healthy respiration is to maintain the coagulability of the blood; and may it not be justly concluded, that the blood, which is thus insufficiently respired, is in a great degree deprived of its coagulable property? Is it not also likely that, if the blood in the aortic ramifications, being impeded in its transit into the veins, the *coagulum* is so mixed with the *serum*, and so dissolved, as to impair very considerably its property of spontaneous coagulability. Mr Thackrah, however, justly remarks, that too much importance has been attached to the liquidity of the blood after different kinds of sudden death, and thinks that the fact is by no means always well established. The blood, which, when contained in the vessels in cases of sudden death, is fluid, if removed from these vessels, undergoes coagulation, slowly, indeed, but still it becomes coagulated. Mr Thackrah, therefore, infers, that it is not so much an incapacity of coagulation, as retarded or very late coagulation that takes place in the circumstances now specified. To this he also adds the fact, that in death by apoplexy, and falls or blows on the head, while the blood within the vessels is fluid, that which is extravasated is coagulated.

3. Under the head of *morbid productions and natural substances from other parts of the body found in the blood-vessels*, are mentioned purulent matter in the veins and lymphatics, ulcers of the inner membrane of the aorta; encephaloid matter, caseous or strumous matter in the veins, veinstones, bile, and air in the vessels.

4. Mr Thackrah thinks that certain facts favour the idea, that the blood may become poisonous, and prove a cause of death to the individual; and he appears inclined to attribute to this cause certain anomalous instances of fatal termination, in which no adequate cause to explain the result can be disclosed by dissection. It may be doubted, nevertheless, whether the

instance of the fatal effects of the application of the blood of the overdriven ox recorded by Duhamel, and quoted by Andral, can be justly referred to this head. The blood or fluids of the most healthy animals or persons may become poisonous when applied to the systems of other persons or animals; but this would not be analogous to disease or death produced in an individual by some morbid state of his own blood. In the case of an overdriven animal, the blood, there is reason to believe, has been deprived of its coagulable power, and has certainly undergone some great physiological change.

5. Under the head of *the Effects on the system of various substances injected into the blood* are mentioned the effects of air, of oil, wine and secreted fluids, of alcohol, nitrous oxide gas, acetate of lead, purulent matter, and water injected into the vessels.

The experiments of Etchepare are quoted to show that the injection of pure alcohol renders the blood grumous, and gives it a milky colour, producing almost instant death; and that, if diluted and in small quantity, it produces intoxication, which subsides as the spirit is exhaled by the pulmonary circulation, and renders the blood thick and creamy.

Acetate of lead injected renders the blood black, and is said not to change its liquidity.

6. Mr Thackrah did not find that the presence of mercury in the system had any effect in preventing or impairing coagulation.

The cutaneous diseases and general scorbutic affections observed to arise from the use of germinated wheat, and similar unhealthy articles of food, and the dropsical effusions observed to follow the use of uncooked and insalubrious vegetable substances, Mr Thackrah infers must previously effect a morbid change in the state of the chyle and blood.

B. *Blood obtained by venesection.*—1. The preternaturally red colour of blood drawn from veins is to be ascribed, according to Mr Thackrah, to the rapidity with which the blood is hurried through the circulation, in consequence of which it is prevented from acquiring the carbonaceous matter and dark colour peculiar to venous blood.

2. The preternaturally dark colour is much more significant, and depends, according to Mr Thackrah, on impairment or abolition of the vital functions. Thus he explains the dark colour of the blood in cholera and congestive fever by supposing, first, reduction of the nervous energy, which then diminishes the force of the decarbonizing process; after which he conceives that the foul state of the blood acts on the nervous system, impairing in a degree still greater its energy; and in this manner

again impeding still more thoroughly the decarbonizing process; "and from this mutual action and reaction of the blood and nervous system proceed all the phenomena of the disease, from the stage of invasion to the collapse of death."

On this subject we beg permission only to ask, what is meant by the *decarbonising process?* Is it not one of the principal effects of the function of respiration?

In speaking of the changes in the temperature of the blood, the author mentions an instance in which, in bleeding a pregnant female, without any peculiar complaints except those incident to gravidity, the stream of blood presented a sensation unusually cold, and which, though not ascertained by the thermometer, communicated to the feelings the same sensation as a stream of water at 68° Fahrenheit.

Rapidity of coagulation is in the inverse ratio of the quantity of blood left in the vessels. Of quantities drawn successively under the same circumstances, and from the same individual, those drawn last coagulate in the shortest time. This is a happy adaptation for checking hemorrhage. The disposition seems to be augmented as the blood flows.

Blood also coagulates with greater proportional rapidity in circumstances of great atony and debility.

In speaking of the buffy coat, Mr Thackrah represents that phenomenon to be generally, though not always, connected with rapidity of circulation, and he adds, that sudden rises of the circulation may be attended with the equally sudden production of size. He also adverts to the fact, that the blood of the horse occasionally presents this character suddenly after a gallop.

When we inquire into the evidence of this alleged rapid motion of the blood we find that it is a fallacy. The only proof assigned is derived from the more frequent contractions of the heart within a given time. In order that this position be well founded, it would be requisite to establish the proposition, that, when the heart contracts 120 times in the minute, it expels from its chambers the same quantity of blood which it does when it contracts sixty or seventy times. There is no reason, however, to believe that the heart does expel at each of the numerous sudden contractions the same quantity which it expels in the more tardy and natural mode of contraction; but there is reason, on the contrary, to believe rather, that it expels much smaller measures of blood; and it might be shown, that though the heart contracts with preternatural frequency, the blood in reality moves much more slowly than natural. From these arguments, therefore, it would result that the buffy coat was connected rather with preternatural slowness and impeded motion, than with increased rapidity.

Mr Thackrah regards the buffy coat as a network of fibrine enclosing serum; and he shows experimentally that it contains 18 per cent. of dry solid fibrin, 26 per cent. of dry solid matter from the serum, probably albumen, and 56 per cent. of water. He accounts for the formation of this substance by representing the fibrine, which is distributed in health in small proportion for the repair of the muscular and other fibrinous tissues, to be increased from more extensive formations, and especially from adhesive inflammation. The great objection to this explanation is, that the buffy coat is formed, not in proportion to the demand for coagulable lymph, but in proportion to the suspension of the circular motion, and nutritious application of the blood. In rheumatism and gout, in which no albuminous matter is secreted, the buffy coat is more dense, more abundant, and more constant, than in pleurisy or *peritonitis*, in which the lymph is effused in abundance.

From these facts, and many others which might be adduced, we infer that the fibrine, of which the buffy coat consists, is the result of the suspension of the process of nutrition.

Mr Thackrah found great diversity in the proportion of the solid contents of the blood.

Preternatural thinness is less frequent than preternatural spissitude. It seems to be most common in such states of the system as amenorrhœa and plethora.

Preternatural increase, in the proportion of the solid contents of the blood, on the other hand, occurs in almost all those diseases for which venesection is prescribed; and Mr Thackrah is led to think that the increase is chiefly in the albumen, in a small degree in the fibrine, and perhaps also in the hematosine. The hypothesis maintained by Dr Stevens upon the salts being deficient, and that deficiency being the cause of the intense fevers of the West Indies, is dismissed with the sarcastic and not very complimentary remark, that it reminds the reader of the simile of Lucian, " a child peeping through the mask of a giant."

In inflammatory diseases, the proportion of fibrine seems to augment in proportion as the mass of blood is diminished by frequent venesections.

Inflamed blood, according to the observations of Mr Thackrah, presents three leading characters; 1*st*, a longer duration of fluidity after being drawn from the vein; 2*d*, a larger and denser crassamentum; and, 3*d*, the albumen uniformly and greatly increased, and the water consequently diminished.

Mr Thackrah rejects entirely the presence of the buffy coat alone, or even of the cupped surface of the buffy coat, as indications of inflamed blood. In this respect, though the practical rule which he deduces is good, he is not original. No physician or surgeon who knows his profession thinks of trusting to the appearance of the buffy coat alone in forming his decision as to the necessity of repeating the blood-letting; nor is any one accustomed to the observation of disease deterred by the absence of these characters from treating by venesection various diseases in which the blood is neither sizy nor cupped. The story of the naval surgeon and his advice to his assistant, only shows the extreme absurdity of trusting to one symptom, or set of symptoms, in deciding upon the application of any particular remedy.

We must now conclude our short notice of this interesting work. The nature of the treatise, consisting as it does of numerous experiments, with short remarks on each, rendered it impossible to give the reader a full account of its contents; but the little which we have laid before him will, we trust, stimulate him to learn more of the work, by perusing it for himself. We can honestly assure him that it will amply repay him for the time spent in more than one reading of it, and that he will share with us in our regret that, for the benefit of the science which he adorned, the talented author had not lived to see his wish accomplished, of laying before his professional brethren a new and complete edition of his favourite work.

Art. IV.—1. *Des diverses Méthodes et des différens Procédés pour l'Obliteration des Artères, &c. Of the different Plans, and of the different Processes for the Obliteration of Arteries in the Treatment of Aneurisms; their respective advantages and inconveniences.* By J. Lisfranc, Vice-President of the Royal Academy of Medicine, and Chief Surgeon of La Pitié. 8vo. Paris and London, 1834, pp. 153.

2. *Quelques Recherches sur l'Histoire Chirurgicale des Aneurismes, &c. Some Inquiries into the Surgical History of Aneurisms, in answer to M. Dezeimeris.* By M. Lisfranc. 8vo. Paris, 1834, pp. 59,

The first of the works, the titles of which are prefixed to this article, owes its origin to the competition which took place at Paris in August last, for the chair of surgery, then vacant by the death of the Baron Boyer. In volumes 42d and 43d of this Journal, we noticed the Theses of two of the competitors, MM. Blandin and Lepelletier, and we now proceed to give an account of M. Lisfranc's, which was declared by a majority of the judges to be the best on that occasion presented. The excellence of the Dissertation, however, did not secure the chair for its author, the election, as formerly stated, having fallen on M. Velpeau.

M. Lisfranc divides his paper into six sections, the first and second of which are devoted to preliminary and historical remarks, the third, fourth, and fifth, to the discussion of the means employed to secure obliteration of the affected artery, and the sixth, to a recapitulation of the author's views. To these are added synoptical tables of the results of the different methods of treatment, constituting a valuable index to the cases of aneurism on record.

M. Lisfranc, rejecting the usual classification of aneurisms, and the terms *true*, *false*, *mixed*, *primitive*, and *consecutive*, which have given rise to much confusion, and defining the disease to be a tumour formed by arterial blood, and communicating with an artery, recognizes but two forms of the disease, the traumatic and the spontaneous.

After stating that among traumatic aneurisms, a pretended primitive false or diffuse aneurism had been described, which he conceives to be nothing else than an extravasation of arterial blood, consequent upon an artery being pricked, M. Lisfranc proposes to restrict the term traumatic aneurism to those tumours produced by blood escaping from an opening in an artery, and forming for itself a sac at the expense of the surrounding tissues. What parts principally concur in forming this sac is a subject which has not been sufficiently investigated. All that is known is, that the blood may escape at once from the parietes and sheath of the artery, or be arrested by the sheath or by the external coat of the vessel. In the first case the sac will be formed by the external cellular tissue, in the second by the sheath, and in the third by the external coat of the artery, which is detached from the other two. In this last case, traumatic aneurism perfectly resembles the most common variety of the spontaneous form. It is by no means of frequent occurrence, and M. Amussat has in vain attempted to produce it by means of *retrusion*—a process afterwards to be described. Little confidence, therefore, is to be placed in the statements of those experimentalists who assert that they can produce aneurism at their pleasure. M. Lisfranc knows of only one instance, and this occurred to M. Amussat on transfixing an artery with two pins; when blood was effused between the external and middle tunics. In no experiment since has this phenomenon been observed.

In traumatic aneurism, the extravasated blood invades more or less the neighbouring tissues. The muscles, tendons, veins, and nerves, are coloured red, and immersed in a tissue infiltrated with sanguineous lymph, so that the artery is with difficulty distinguished amid the confused mass. M. Lisfranc's pathological researches do not lead him to agree with authors, that the artery in such cases is ever inflamed, or presents any alteration save the cicatrix consequent upon the opening. In the majority of cases this may be true, but in a consecutive false popliteal aneurism, as large as the head of a fœtus of five or six months, dissected by M. Lisfranc, the tumour was found to have diminished the calibre of the artery by a third, both below and for three lines above the opening, while higher up, and for an inch above its passage through the *adductor magnus*, the vessel was almost double its ordinary size. None of its coats were ruptured. The parietes were thickened, without appreciable inflammation, and more friable than elsewhere.

The characters of spontaneous aneurisms are different. The principal fact connected with them is, that they affect almost exclusively the aortic system; for of three hundred cases occurring to or collected by M. Lisfranc, only two or three were to be found, and these liable to objection, in which the pulmonary artery was affected. This he attributes to a difference in their structure, which we shall endeavour to explain.

On submitting the internal coat of a large aortic artery to a careful examination, a thin transparent pellicle will be found lining the interior of the vessel. Externally to this appears a dense, hard, brittle tissue, which can be separated only in scales, forming in reality a separate tunic composed of several layers, situated between the fibrous and serous coats. This structure, which Malgaigne has named the *sclerous* tunic, is that which renders the parietes of the systemic stronger than those of the pulmonary arteries, so that if a branch of each of equal calibre be cut through, that from the aorta will present an almost circular opening, while that from the pulmonary artery will be evidently collapsed. When any species of concretion, or any point of ossification occurs in the aorta, it is almost always in this tunic, and it is remarkable, that in the pulmonary artery where this coat is not found, no well attested case of ossification is to be met with.

On examining an aneurism attentively, the different coats of the affected artery will be found more or less altered in their texture and properties. They are generally thickened, softened, and beset with different concretions, both at the point corresponding to the tumour, and also above and below it. Whatever the alteration be, the coats are deprived of their elasticity, and, yielding to the force of the blood, become dilated, so as to constitute aneurism. Sometimes the artery is dilated only on one side, at other times in its whole circumference. Sometimes the three tunics are dilated at once, but more frequently the internal coats, which are less extensible, are divided, and the sac is formed of the external one alone.

There are other varieties which M. Lisfranc does not particularize, because it is impossible to discover them before the operation. The alteration of structure, it is well known, always extends considerably beyond the aneurism, and the farther from the tumour the means of obliteration are applied, the greater is the security and the chance of success. In some individuals, the arterial system is affected throughout its whole extent, thus constituting the aneurismal diathesis.

Varicose aneurism is usually produced by a traumatic cause.

It would be interesting to ascertain the occasional and predisposing causes of aneurism. To render the results, however, of any consequence, it would be necessary to undertake this long and painful labour on a great scale, and the want of detail in many of the recorded cases, prevents the inquirer from gaining the information of which he is in search. M. Lisfranc has endeavoured to ascertain the influence of sex and age in producing the disease, and its comparative frequency in different arteries. The following are the results.

Women are in general less liable to the disease than men, but the statements of authors require to be modified. According to Mr Wilson, Mr John Hunter affirmed that he had never met with a woman affected with true or spontaneous aneurism. In Mr Hodgson's 63 cases, in 29 of which the disease was situated in the aorta, the proportion was, 56 men to 7 women, or 8 to 1. M. Lisfranc's estimate differs widely from this. In 154 cases collected by him, none of which could be the subject of a surgical operation, the proportion was 141 men to 13 women, or nearly 11 to 1.

Of the comparative frequency of the disease in different arteries, M. Lisfranc gives the following table:

1.	Popliteal aneurism,	59	10.	Anterior tibial,	3
2.	Crural, do. at the groin,	26	11.	Gluteal,	2
	other points,	18	12.	Internal iliac,	2
3.	Carotid,	17	13.	Temporal,	2
4.	Subclavian,	16	14.	Internal carotid,	1
5.	Axillary,	14	15.	Cubital,	1
6.	External iliac,	5	16.	Peroneal,	1
7.	Brachio-cephalic,	4	17.	Radial,	1
8.	Humeral,	3	18.	Palmar,	1
9.	Primitive iliac,	3			

Hodgson's numbers are, femoral, 15; inguinal, 12; subclavian and axillary, 5; carotid, 2.

The age at which aneurism most frequently appears has not been sufficiently investigated. M. Lisfranc has collected 120 cases in which the ages of the patients were ascertained, and the following is the result.

13,	1	20 to 25,	5
15 to 20,	3	25 to 30,	12

30 to 35,	24	50 to 55,	11
35 to 40,	15	55 to 60,	6
40 to 45,	20	60 to 70,	3
45 to 50,	17	70 to 80,	3

From this table it would appear that aneurism occurs most frequently between the age of 30 and 50. In the ten years above and below that period, the diminution is very remarkable. Before 20 and after 60, the disease is very rare. Aneurism by anastomosis is met with most frequently before the age of 15, very rarely among adults, and M. Lisfranc knows of no case occurring in old age.

In the historical details we find much interesting information. Without seeking to deprive the moderns of their due share of merit, M. Lisfranc does full justice to the ancients, and brings to light some circumstances which both Sprengel and Dezeimeris have either altogether omitted or stated inexactly.

After remarking that though the ancients appear to have been aware of the occurrence of spontaneous aneurism, the most of their plans had a reference to the traumatic species only, M. Lisfranc proceeds to state, that the first known plan of treating the disease has escaped the notice of all writers on medicine. It is that of Rufus, quoted by Aetius, and thus translated by Montanus. "Si vas, unde emanat sanguis, profundum fuerit, * * * ubi situm ejus et magnitudinem diligenter perspexeris, noverisque numquid vena sit an arteria, *vas immissa volsella extendemus et moderate circumflectemus.* Ac ubi ne sic quidem cessaverit, vinculo constringemus; nonnunquam et post vinculi nexum, oblique vas incidere cogimur." Aet. Lib. xiv. cap. 52. Venet. 1534. If the first part of this be compared with the expression employed by Galen, in the only passage where he speaks of torsion, the sense, turn of the expression, and members of the sentence will be found to be the same, the words alone being different. The torsion of the arteries here spoken of is not a mere random expression;—for it is repeated by Galen, copied by Avicenna, lauded by Cæsar Magatus, and even in the seventeenth century supported by M. A. Severinus. Here also we find simple ligature recommended, and in certain cases, ligature with section of the vessel.

Aetius afterwards described another process, which he seems to have invented. The aneurism being situated at the bend of the arm, he exposed the artery three or four fingers breadth below the arm-pit, and having passed two ligatures round it, divided it, and afterwards opened the aneurismal sac, removed its contents, and tied the artery at this point *sicut priorem.* This last expression would lead us to infer, as M. Dezeimeris has done, that he placed two ligatures on it also.

When we come to the epoch of Paul of Ægina, we find that this practice had been modified considerably. To him belong two operations, the one for traumatic, the other for spontaneous aneurism. In the latter (*si ex arteria dilatata tumor obvenerit*) he exposed the artery, applied two ligatures by means of a needle, and plunged a bistoury into the middle of the vessel. Though the text is very obscure, it is natural to suppose that he punctured the sac, and placed a ligature above and below it. Thus the plan of Dionis and almost all the surgeons of the eighteenth century, may be traced directly from Paul of Ægina. In traumatic aneurism (*si ex ruptura arteriæ creatum sit aneurisma*) the operator seized the whole tumour with his fingers and pierced it at its base with a needle, furnished with two threads, with which he secured separately each half of the tumour. If it were too large to be thus operated on, four threads were passed, and four portions were ligatured. The object of the operation was to remove the cyst and leave the artery entire. This plan has been recommended by some of the moderns, but probably never put in execution.

The Arabians did not confine themselves to the mere copying of the Greeks. Avicenna recommends simple ligature in wounds of arteries, and directs to be placed between the wound and the heart. If the lower opening should bleed he enjoins the application of a second ligature. The same may be found in Galen; but the following plan, adopted by Avicenna in the case of the larger arteries, is, in M. Lisfranc's opinion, quite original. A plug composed of rabbit's hair, cobwebs, fine cotton, old linen, provided with substances proper for arresting hemorrhage, was to be introduced into the artery, and a ligature, firmly applied above it. In this will be seen the elements of an operation more recently brought forward.

Guy de Chauliac first recommended compression of the tumour with the use of astringents, a plan afterwards followed by Paré with no satisfactory results. Guillemeau has been looked upon as the founder of Anel's method; but, according to M. Dezeimeris, he merely copied the plan of Aetius. To prove that M. Dezeimeris is in error, M. Lisfranc quotes from Guillemeau several passages, which show that his plan was the same as Anel's, but very different from that of Aetius. But Guillemeau did not bring forward his plan as any thing new, and M. Lisfranc naturally set about inquiring whether it might not have been communicated to him by his master Paré. In the course of this investigation, he met with a passage in the 34th chapter of the 7th book of Paré, in which, after narrating a case where death ensued from opening an aneurism which had been unsuccessfully treated with astringents, he counsels the surgeon never to open an aneurismal sac, unless small, and situated in a part not dangerous, but instead to expose the artery and pass a needle armed with a thread under it both above and below the wound, allowing the ligatures to fall out of themselves. The words are these: "Quare tyronem chirurgum diligenter monitum velim, ne temere aneurismata, nisi forte exigua sint et in parte ignobili, nec insignibus vasibus prædita, aperiat; hac potius arte curationem aggrediatur. Cutis superincidatur, dum patefiat arteria, patefacta ipsa, scalpello undique a circumstantibus particulis diducatur, ipsi retusa et incurva acus introrsum filum trahens subjiciatur, tegetur, hinc abscindatur, intorti fili lapsus expectetur, dum natura abscissæ arteriæ oras regenerata carne abducet; dehinc reliquum curationis simplicium vulnerum modo absolvatur." The latter part is thus translated by Johnson, 1678. "Cut the skin which lies over it, until the artery appear, and then separate it with your knife from the particles about it, then thrust a blunt crooked needle with a thread met under it: bend it, then cut it off, and so expect the falling off the thread itself, whilst nature covers the surfaces of the cut artery with new flesh; then the residue of the cure may be performed after the manner of simple wounds."

Thus, M. Lisfranc affirms, Desault or Hunter's plan may be traced first to Anel, then to Guillemeau, and last of all to Paré.

These facts do not in the least detract from Mr Hunter's merits. The continental writers obstinately shut their eyes to the circumstance, that his claims rest, not upon the application of the ligature, for that, as we have seen, may be traced far enough back; but upon his discerning the great advantages to be gained by tying the artery at a distance from the diseased portion, upon the principles on which the cure was perfected, and upon his establishing the truth of his doctrines by experiments and observations. In these his originality cannot be disputed; and it is, to say the least of it, unfair to endeavour to lessen a man's reputation by showing that he has no right to an honour which he never claimed, and at the same time keep in the back ground his true title to celebrity.

Though M. Berard, in his article on aneurism, has asserted that M. A. Severinus applied the cautery with success to the cure of that disease, a reference to his writings will prove that it was rather on account of the gangrene than of the aneurism that he recommended it; and M. Lisfranc declares that no where has he been able to find that barbarous plan practised or recommended.

In France the timid surgery of the seventeenth century contented itself principally with inventing new apparatus for compressing the tumour. With Dionis alone, it seemed to revive; but it was the operation of Paul of Ægina that was in repute, At this period, however, a new plan of applying the ligature was spoken of, which consisted in placing between the thread and the artery a small roll of linen,—a method of which Scarpa was believed to be the inventor. To this epoch also may be referred the plan of tying the artery by passing the needle through the vessel, which was afterwards reproduced by Sir Astley Cooper.

At the beginning of the eighteenth century, Anel treated an aneurism of the brachial artery according to the forgotten notions of Paré. Seventy years, however, elapsed before its advantages were duly appreciated, when Hunter and Desault put it in practice almost at the same time in England and France. The Old Academy of Surgery followed, with some modifications, the plan of Paul of Ægina.

Who invented the ligatures of reserve is not exactly ascertained, nor is it of much consequence. It is well known that they used to be employed to the number of two, three, or four, above and below the tumour, and that they almost always proved unsuccessful.

At this period also the method of Valsalva, together with the application of refrigerants to the tumour, continued to be employed. Lambert proposed to sew up the opening in the artery; and finally, Brasdor recommended the tying of the artery on the distal side of the tumour, or between the aneurism and the capillaries. Pressure upon the artery, both above and below the tumour, was also tried.

The nineteenth century found the ground thus cleared. The place where the ligature ought to be applied was generally agreed upon; but new discussions arose regarding the kind of ligatures to be used, and the method of applying them; such as, whether they ought to be large or small, mediate or immediate, of thread, silk, metal, or doeskin, definitive or temporary, left in the wound, or permitted to hang out, and, in fine, whether any other means could be substituted for them. Among the methods proposed may be mentioned the seton, the introduction of foreign bodies into the vessel itself, simple acupuncture and acupuncture with electricity, torsion, retrusion *(refoulement)* pinching, the last three being due to the inventive spirit of M. Amussat.

Such is a short account of the historical details given by M. Lisfranc. In them we remark the usual omission of the labours of British surgeons, which are scarcely even alluded to. Surely it would have been but justice to have sketched, however briefly, the improvements and discoveries of Cooper, Thomson, Jones, Hodgson, Travers, Lawrence, and Hutchinson, who, though not able to compete with Amussat in the number of inventions produced within a given time, have the more useful, though less obtrusive, merit of refuting erroneous notions, formerly prevalent, and of perfecting the minutiæ of the operations.

We now come to that portion of the treatise which M. Lisfranc devotes to the examination of the various plans contrived for the obliteration of the affected vessel in cases of aneurism. These he arranges under three heads. The first comprehends the means acting on the tumour itself, the second those acting on the artery between the tumour and the heart, and the third those employed beyond the tumour.

The processes which act upon the tumour itself consist of the application of stiptics or refrigerants, compression, incision, and plugging, suture, electropuncture, and the cautery. Of these it is necessary to notice electropuncture alone, as all the rest must be familiar to the reader.

The experiments of Sir Charles Scudamore proved that electricity tended to promote coagulation of the blood, and M. Pravas proposed to unite galvanism to acupuncture. To ascertain the effect of this agent in arresting hemorrhage, MM. Pravaz and Guerard opened the aorta of a rabbit. The blood escaped with jets; but on bringing galvanic conductors near the orifice, a brownish clot was formed immediately, which suspended for a moment the flow of blood. Whether galvanism communicated by needles to the blood in an aneurismal tumour will have the effect of coagulating it, remains to be proved. In the absence of all facts favourable or unfavourable, M. Lisfranc offers no opinion except on the ingenuity of the plan. We have cited it merely for its novelty, which, in our opinion, is its only recommendation.

The means of obliteration applied to the artery between the aneurism and the heart are, compression, mediate and immediate, ligature, plugs, the seton, acupuncture, torsion, retrusion, *(refoulement)* and pinching. We beg to direct the reader's attention to the last three, the honour of inventing which is claimed by M. Amussat.

Torsion would at first sight appear to be applicable only to arteries opening on the surface of a wound, but its inventor and many others consider it useful in cases of a different description, as will be seen in the sequel.

If in the subject an artery be exposed to the extent of some lines, fixed by means of a pair of forceps or two fingers, and twisted on its axis, till the membranes be ruptured, the following phenomena will occur. The twisted cellular coat forms a species of cap, surmounted at its extremity by a small knob, produced by the torsion of the membrane. The vessel is perfectly obliterated, the internal and middle coats are irregularly ruptured above the points where the forceps is applied, contract, detach themselves from the cellular tunic, and, in fine, sometimes curl up in the interior of the vessel. The same takes place in the living subject. But immediately after the operation, the end of the artery is raised by the pulsations of the column of blood to which the twisted cellular coat opposes an obstacle almost insurmountable, and, as happens when the ligature is applied, a clot of blood is formed. This adheres by its base to the point where the middle and internal tunics are torn and separated from the cellular, and the more extensive this separation is, the stronger are the adhesions. The vessel thus obliterated undergoes, as far as the first collateral branch, the same changes as after ligature. While the inflammatory process with effusion of lymph is going on internally, the same takes place externally around the cellular coat, which is thereby agglutinated to the neighbouring tissues to the increase of its resisting power. What becomes of the twisted extremity of the artery has not been precisely ascertained. M. Amussat is inclined to think that it mortifies or is absorbed, leaving the internal coats retruded and agglutinated. Schrader believes it to be converted into fibrous tissue.

When the calibre of an artery is considerable, M. Amussat modifies the process in a slight degree, with a view of rendering the operation more secure. The instruments which he uses consists of four pairs of forceps, two of the ordinary shape, one denominated by him *pince a baguettes*, the two blades of which terminate in well polished cylindrical rods, half a line in diameter, and several lines in length, and a fourth pair for torsion, which is furnished with a slide, to close and fix the blades. With these the operation is thus performed.

With one pair of ordinary forceps, the free extremity of the artery is seized, and with the other the vessel is disengaged from the surrounding parts and made project five or six lines beyond the wound. When thus thoroughly isolated, the last is replaced by the twisting forceps, with which the artery is laid hold of transversely at its extremity. The *pince des baguettes* is then applied to the vessel on a level with the wound, and pressed firmly, for the purpose of cutting through the middle and internal coats, after which the forceps for torsion is twisted in its axis to the extent of half a circle, as if the vessel were to be rolled round its points like a ribband, the *pince a baguettes* being taken as the point of resistance. In fine, by a see-saw motion of the body of the forceps, at first perpendicular to the axis of the artery, as if to commence the torsion, it is brought insensibly in the direction of this axis, and by rolling the instrument between the fingers the torsion is finished. The *pince a baguettes* is then withdrawn and with the twisting forceps, the end of the artery is pushed into the wound, or the knob is cut off.

The success of the process depends in a great measure on the modifications which the extremity of the vessel undergoes in the last two steps of the operation. When by pressure, the two internal coats are cut through, they retract, and leave the uneven surfaces of the cellular tunic in close contact with each other, in consequence of the pressure of the instrument above described, the slender blades of which are separated only by the thickness of this tunic. When, therefore, the artery is rolled on the other forceps, it is forced to pass through this narrow space, which not being sufficient to admit all the three coats united, the two internal, which are but slightly attached to the external, are detached from it, and curl up into the interior of the vessel. This is that modification of the operation called retrusion, to be afterwards described. In proportion as the cellular coat is twisted, the artery is withdrawn more and more through the *pince a baguettes*, the internal tunics are proportionally separated, and ascend like a free tube in the interior of the vessel, and on pressing the portion behind the instrument, a sort of wedge will be felt passing between the blades and separating them.

If the artery be examined after the operation, it will be seen terminating in a slight rounded swelling, surmounted at the centre by the twisted cellular tunic. When opened in the direction of its axis, it exhibits a tube formed of the internal coats of the vessel, in such a manner that the surface by which the retarded tunics adhered to the external coat constitutes the interior of the tube, around which there is a circular *cul de sac*. The opening situated at the middle of the summit is extremely small, in consequence of the approximation of its walls. The tube ascending in a direction opposite to the current of the blood would soon be drawn back by it, if left to itself, but sustained by the torsion of the cellular coat it presents an insurmountable barrier.

To prove the degree of resistance which an artery thus twisted offers to the current of blood, M. Amussat made use of forcible injections, but though the vessel was elongated thereby, it never gave way. When, however, simple torsion without retrusion was employed, the internal coats have on some occasions been ruptured, and the fluid effused into the cellular tunic without, however, having the effect of untwisting it.

Fricke of Hamburgh prefers another plan, which is more simple but less secure. The chief difference between his and M. Amussat's consists in not fixing the artery previous to employing torsion, which his experiments have led him to suppose unnecessary. M. Amussat's observations lead him to adopt an opposite opinion, which is supported by M. Lisfranc.

Torsion has not yet been employed for the cure of aneurism, and till the experiment be tried, M. Lisfranc conceives that it would be rash to predict any thing concerning it. Considering, however, its success in wounds and amputations, he thinks a trial of it justifiable. Our opinion is, that not only would the operation be more tedious and severe, but the success less sure than when the ligature is employed.

Retrusion (*refoulement*) is another operation devised by M. Amussat. All the instruments necessary are two pairs of forceps *a baguettes*. The artery is to be separated for some lines from the neighbouring tissues, and to be seized with the instruments, which are to be pressed together so as to rupture the middle and internal coats. These, instead of being pushed up towards the heart, as in torsion, are retruded in an opposite direction. On opening the artery in the subject, the coats are found inverted and retruded, so as to form a small tube, as in torsion, only in an opposite direction. In the living body the following takes place. The artery left to itself regains its situation, the blood strikes against the cone of the retruded membranes, and continues for some time to traverse the small central canal. At the end of forty-eight hours a clot is formed, which obstructs the passage. On the fourth day the clot is complete, and adheres strongly throughout to the denuded cellular coat, the base of the retruded portion, and the interior of the canal like a nail. In most cases, the exterior of the artery, which is isolated at this point from the neighbouring parts, suppurates, and when the cure is complete, exhibits a fusiform swelling (*un renflement fusiforme.*)

When retrusion is practised on the side towards the heart, the blood by its impetus commonly pushes back the membranes, and the formation of the clot is slow and difficult.

Two objections may be made to this operation; 1*st*, that the cellular coat will not bear the necessary traction, and 2*d*, that a consecutive false aneurism may be the consequence. The first is answered by the fact, that the external coat resists greater force than what is necessarily used in retrusion; and to the second it may be replied, that the accident dreaded has never occurred in any experiment made by M. Amussat, even when he attempted to produce it. The experience, however, of the inventor has led him to abandon the operation, and this is a sufficient objection to it.

It has already been mentioned that, by pressing an artery between the blades of a pair of forceps, the internal membranes are ruptured, while the external remains entire. If the vessel be then left to itself without suspending the current of blood, each wave washes the little wound, carries along with it the coagulable lymph as soon as it is formed, or hinders its agglutinating, so that a clot is never formed. Whatever be the number of the pinches, obliteration of the artery never takes place. On applying a ligature, however, below these *mâchures*, a clot was readily formed, which, upon opening the artery, was found to have produced a small circular projection at each compressed portion, (*chaque mâchure.*) In four days the adhesions are completely organized, and the ligature may be removed. This operation has not yet been performed on man, and, notwithstanding the sanguine view taken by M. Lisfranc of the advantages to be gained from it, we see in it nothing deserving of notice except as a surgical curiosity.

Passing over that part of the treatise devoted to the consideration of the plans for obliterating the artery, by applying the means beyond the aneurismal sac, we reach the concluding section, in which the author sums up his opinions. These we shall give very briefly.

The means applied to the tumour are inefficacious. Some of them, as suture and plugging, are dangerous, and ought to be rejected. Electro-puncture is to be looked upon as a conception rather than operation.

The means applied to the proximal side of the aneurism are at once the most certain and powerful. Some tried only on the lower animals are inadmissible, such as the seton, acupuncture, retrusion, and mechanical plugs without ligature. Mediate and immediate compression and ligature are not free either from inconvenience or danger. Torsion and pinching with ligature deserve to be tried.

Brasdor's plan is applicable only when the other methods are unadvisable, or impossible to be executed.

In regard to particular plans, it may be remarked, that compression is too painful and inefficacious, and that simple, and in some cases double ligature, with section of the artery in the interval, are preferable, unless they should be replaced by torsion, or pinching, with ligature. There is only one case to which these conclusions are inapplicable, and that is in ossification, or any important alteration in the structure of the artery. In such a case M. Lisfranc recommends immediate compression, according to the plan of Malágo, or the introduction of a plug of wax into the artery, in imitation of MM. Roux and Dupuytren.

M. Lisfranc concludes this section with a rapid view of the operations applicable to each species of aneurism, for the particulars of which we must refer our readers to the treatise itself.

The analytical table contained in the last thirty-seven pages, is perhaps the most useful and extensive that has been drawn up on any subject connected with medicine. To analyze it would communicate little or no information to the reader. We must beg him to study it for himself, satisfied as we are that, though there had been nothing interesting in the rest of the work, this alone would have given it a claim to be placed on the shelves of every medical library.

We have now to state briefly the circumstances which led to the appearance of the second publication, the title of which appears at the commencement of this article.

It must be known to many of our readers, that one part of the comparative trial instituted in the election of a professor in Paris, consists in each candidate defending his thesis against the objections which may be raised against it by the other competitors. This is no mere form, for the thesis is sure to be criticised by rivals, both learned and acute, and interested in depreciating its merits. The task of the author is thus rendered arduous enough, without any other individual who may be particularly acquainted with the subject, stepping forward to assist his opponents. This on the present occasion was done not only in an ungenerous, but, as we conceive, in a highly dishonourable manner, by M. Dezeimeris, the under librarian to the Medical Faculty of Paris,—a situation which is always filled by some man of learning connected with that body. His erudition and talents were appreciated by none more than by M. Lisfranc, of whom, on the present occasion, he took so unjustifiable an advantage. The facts are these.

M. Lisfranc, in his historical details impugned, but in the calmest manner possible, some of the opinions of M. Dezeimeris, who hastily printed an answer to them. This, though couched in rather unbecoming language, and charging M. Lisfranc with ignorance, and falsification of quotations, might have been looked upon merely as a specimen of bad taste in conducting a controversy. But M. Dezeimeris carried his malice farther. He distributed to each of M. Lisfranc's fellow candidates, and to each of his judges on the morning of the discussion, a non-corrected proof of his pamphlet, evidently with the view of leaving M. Lisfranc at the mercy of his rivals. It is needless to say that he received no copy. Accordingly, when the discussion commenced, M. Berard began by objecting to the historical details; the name of M. Dezeimeris happened to be mentioned; and M. Lisfranc addressed to the judges and the assembly a manly statement of the circumstances of the case. These were no sooner known, than the other candidates, with a feeling truly honourable, waived all discussion on these topics. The argument then went on, and M. Lisfranc defended himself ably against all his opponents.

In his answer, published after the election had terminated, M. Lisfranc triumphantly refutes all M. Dezeimeris' statements in a style of cool severity, to which we know no parallel except Gibbon's answer to Davies. Independently, however, of this, it will be found to be an excellent supplement to the thesis, illustrating and explaining it in many points of importance. In these circumstances, we recommend it also to the perusal of our readers.

ART. V.—*Report from the Select Committee on Medical Education, with the Minutes of Evidence, and appendix.* Ordered by the House of Commons to be printed 13th August 1834.

IT is but very recently that the Evidence of the Select Committee on Medical Education, of which Mr Warburton was chairman, has been available to public use; and we are therefore desirous of employing the first opportunity for introducing this very interesting document to the notice of our readers.

The extent of the evidence is so great, and the topics which it embraces so diversified, that we have no doubt of these circumstances, united with the important nature of the inquiries involved, not only to the honour and interest of every branch of the medical profession, but to the advantage of the public, being considered as sufficient cause for devoting attention to this subject, both at present, and subsequently.

It will be our object to render the matters of investigation as intelligible as possible, and therefore to give such collateral illustrations as may be necessary to make them so. We must necessarily, however, confine our analysis to the more material points of discussion; but we shall not alter the order of the inquiry, or aim at taking off too much from the desultory and irregular character which it bears; for though we should, by this means, gain in perspicuity, we should diminish the interest of the investigation, and see less of the temper and qualifications of those whose examination forms the materials of the work, than would otherwise be the case.

The evidence which first comes under consideration is that which relates to the College of Physicians of London, and the first gentleman examined is Dr Francis Hawkins, the Registrar of the College. Previous to giving a statement of his evidence, it may be proper to present a slight introductory sketch of the constitution and government of that body, for the information of such of our readers as may not have attended much to the subject.

The College of Physicians was founded in the year 1518, by a charter of Henry the Eighth, which was confirmed by Act of Parliament a short time subsequently. It consists of Fellows or *Socii*, who form the governing body of the college, and possess whatever privileges or immunities belong to it; of *Candidates*, who are in their year of probation to become fellows; of *Inceptor Candidates*, who are in time to become candidates; of *Licentiates*, who are equal to all the former in the rights of practice, but have nothing to do with the government of the college, or with any of those public duties which attach to that body; and of *Extra-Licentiates*, whose authority of practice does not extend within seven miles of the metropolis. Belonging to the college is a separate body, 8 in number, called *Elects*, who have the annual election of the president, independent of any interference of the body at large, the examination of extra-licentiates, and the filling up of their own vacancies. The college annually elect four *Censors* from the body of *Socii*, who are invested with the inspection and government of the profession of physic in London, and within seven miles of it the visitation of apothecaries' shops; who, with the president, have the examination of applicants for admission into all the above named classes, except that of extra-licentiates. A penalty of L. 5 per month, attached to any one practising as a physician in London, or within seven miles of it, without the authority of the college; but no penalty is applicable to any one practising, without such authority, at a greater distance from the metropolis than seven miles. Graduates of English universities can practise in the country, but not in London, without permission from the college.

The original charter gave the power to make bye-laws for the government of the body, but did not point out the mode of continuing the succession, which is therefore dictated by bye-laws, which have been the source of much discussion and disagreement in the profession. The great policy of the college has been to confine the admission of fellows to the graduates of the two English universities and of Trinity College, Dublin; and the bye-laws were accordingly framed with this view. But when these bye-laws were objected to sixty or seventy years ago, by Lord Mansfield, as being illiberal, and contrary to the spirit of the charter, some alterations were made respecting licentiates, which were approved by the Court of King's Bench in the action brought by Dr Stanger in the year 1796, and still continue as the laws of the college.

By these alterations, which are viewed as very unsatisfactory by the body of licentiates, the president has the power of proposing, at certain intervals, a licentiate of ten years standing, and of the age of 36, for election as a fellow; and 2*d*, any fellow may propose a licentiate of the same age, and of seven years standing, for examination as a fellow, and if the body assent, he is admitted to examination, and if approved, received as a fellow. But the examination, instead of being conducted by the censors in the ordinary way, is to take place before the body at large.

It may be proper likewise to state, that a petition was presented to the House of Commons some time since, from a large body of the licentiates of London, which we noticed in the 41st volume of this Journal, p. 255, complaining of the oppressive regulations of the college, and praying for a Parliamentary inquiry.

We shall now go on to the consideration of the evidence of Dr Hawkins.

By the information of this gentleman, the proceedings of the college are recorded in its annals, which extend from the year 1555, to the present period; with the exception, that the volume is wanting which comprehends the period between 1771 and 1781. A summary of the history of the college, from the granting of its charter in 1518, to the commencement of its annals, was drawn up by Dr Caius, and is prefixed to the first volume of annals. The bye-laws are not published, but they are accessible to fellows of the college; and such parts as relate to the licentiates are furnished to them: copies of the bye-laws, as varied from time to time, are not usually kept; but a complete copy of the bye-laws, as existing in 1696, is inserted in the annals of that period. In the year 1765, new statutes were framed, with the assistance of Mr Yorke, afterwards Lord Chancellor Hardwicke.

When Dr Wells was proposed for examination on the 30th of September 1797, the previous question was moved, and it was decided that the question should not be put.

No licentiate has ever been elected in consequence of such bye-laws, and one only in addition to Dr Wells has been proposed, Dr Pearson, a very old gentleman; but he died before the period for the examination came on.

The Committee, we are here informed, took upon themselves to look over the college annals, which were put into their possession by Dr Hawkins.

The next gentleman who came before the committee was the president of the college, Sir Henry Halford; and the first part of his examination related to the officers of the college, and the general mode in which its affairs are conducted, to which we have already sufficiently adverted. He was next questioned as to the case of Dr Wells, and of some other gentlemen who wished to obtain admission as fellows of the college; and here it is proper to state, that Dr Wells was an hospital physician, and medical writer of great eminence in London, a fellow of the Royal Society, and highly distinguished by one of the most able scientific treatises in our language, the Essay on Dew. He was honoured by the Royal Society with both the Copleian and Rumford medals.

This gentleman, it may be observed, wished to know by an application in his own person, whether the bye-law which was substituted for that which was declared by Lord Mansfield to be an illegal one, was intended to be carried into effect with honour and good faith; or whether it was framed in order merely to escape the reprehension to which the former had been subjected. Being, therefore, a licentiate of more than seven years standing, and of the age of 36, Dr Wells was proposed by Dr Pitcairn, for an examination as a fellow; but this proposition was first thrown aside on the ground of undue notice, and was afterwards, as stated by Dr Hawkins, determined by the college not to be put.

The proceedings are given at length by Dr Wells, in a letter to Lord Kenyon; but this explanation may be sufficient to make the business intelligible.

Sir Henry Halford was with difficulty brought to give an opinion as to the fairness of the College proceedings relative to Dr Wells, and considers that the statements of that gentleman, as to the transaction in question, were to be received with some degree of caution, on account of his being a disappointed man; but it does not appear that any of the facts stated by the Committee to Sir Henry Halford depend on Dr Wells's evidence alone.

The case of the octogenarian, Dr Pearson, is brought forward two or three times by Sir Henry, as well as by Dr Hawkins, and other fellows of the college, to show that the bye-law was not inoperative. Sir Henry expresses his conviction that Dr Pearson would have been elected, "if he had not died;" for the proposition was "unanimously received." But the unanimous reception of the proposition, was merely to admit to examination; and where could be the certainty of the result, if the examination meant anything?

It must really excite a smile to be informed, that, at a time when he was old enough to be father to half the college, and grandfather to a fair proportion of the fellows, a gentleman should take it into his head to read Greek, and prepare for an examination, which was to give him the dignity of coming in behind some who were half a century younger: and we leave it to our readers to determine, whether the ardent desire to become a member of a body which might, if they had been so inclined, have admitted him by special favour many years before, as they had done several of his juniors, evinced more of strength or imbecillity of mind.

With regard to the power of admitting licentiates by favour, into the class of fellows, through the proposition of the president, Sir Henry Halford states, that seven or eight have been admitted during his presidency of fourteen years, and that he did not recommend one last year, because he did not see any licentiate of extraordinary eminence who was entitled to that distinction.

There is no curriculum of study required by the college; "nor do we ask," says Sir Henry, "where a person has got his knowledge, provided he possess it." The examinations are conducted by the president and censors; and three or four are generally examined in about two hours. The persons examined must be of the age of twenty-six. All the fellows have the right of attending the examinations; but it is not the habit of any but the official persons to do so. The examinations are three; and are the same for fellows and licentiates, with the exception, that the former are examined in the Greek medical classics, the latter are not so, except with their own special assent. The physic which is acquired at Oxford and Cambridge "is undervalued by those who reproach the universities for not being schools of physic;" but English graduates go to Scotland and elsewhere to study, and therefore superadd to the advantages which they obtain there, the benefits of a preliminary education; but it does not appear to Sir Henry Halford that there was a "less good opportunity of acquiring information at the English universities than at the others; there are clinical lectures," says he, "and anatomical, and exceedingly good lectures."

Sir Henry "would guess, that the examinations for degrees in Edinburgh are not carried on with great strictness," because "some of the persons who have passed have been rejected by the College."

There is no examination in the College in Midwifery and Surgery; and the fellows, but not the licentiates, are prohibited from practising the former, which is regarded as a manual operation, which would tend to disparage and throw discredit on men "who had been educated at the universities, and who had taken time to acquire improvement of their minds in literary and scientific acquirements." But the college are glad if a licentiate will practise midwifery. They will not examine persons who come before them that are connected with the College of Surgeons, or any other corporation "not strictly medical," unless they are previously disfranchised.

The College cannot prevent surgeons or apothecaries from practising physic, and find much difficulty and expence in excluding irregular practitioners from practice; but the public look up to the college as the tribunal by which persons properly educated are admitted into the profession, and the estimation in which that body is held may be inferred from the "large attendance at the evening meetings."

Sir Henry thought that the power should not have been taken out of the hands of physicians to license general practitioners; but with regard to licensing accoucheurs, the college declined having any thing to do with it. Extra-licentiates have only one examination.

A residence of two years at a university is necessary for a licentiate; but the president has the power to nominate an eminent person to become a licentiate, who may not have been at a university at all; and Sir Charles Clarke, and Dr Mason Good were so nominated. The Archbishop of Canterbury possesses the prerogative of making a doctor of physic; but the two last Archbishops have required the doctors of their nomination to go forthwith and show their competency to the college. This, however, it is clear, cannot be done with such as have not been two years at some university, unless by the suspension of the law upon the subject.

There was formerly a statute by which King's physicians were authorized to take their seats at the right hand of the president immediately on their appointment; but this has been long repealed; and when the late King, ten years ago, was desirous of making a certain licentiate his physician (Dr Southey) he said to Sir Henry Halford privately, "You had better make him a fellow of the college," and he was accordingly proposed by Sir Henry and elected.

Sir Henry was asked about the opposition made some years ago by the college to the granting a charter to the Medical and Chirurgical Society, of which he was then president; but he seems, by his answers, to have singularly forgotten the subject entirely, though he took a prominent and influential part in the business, as appears by after evidence. He does not approve, however, of passing laws or orders, such as that which Mr Warburton stated was made, during the application of that society for a charter, by which fellows of the college were prevented from interfering "in promoting the charter solicited by any medical or chirurgical society, without having first obtained the leave of the president and fellows of the college."

Sir Henry thinks that apothecaries should be paid for their attendance, and not for their medicine. He sets his face, he tells us, very much against the latter; "for every apothecary who enters a house, enters it," as he says, "with that mark upon his forehead,—You are to take as much medicine as I can get you to take, and that procured by me at as cheap a rate as I can procure it." General practitioners, he is of opinion, should be examined by a united board, consisting of physicians, surgeons, and apothecaries. Their education should be good, the more the better; but while "a knowledge of both languages, a knowledge of metaphysics, a knowledge of mathematics, are absolutely necessary, as a preliminary education to Physic, with reference to the dignity and respectability of the profession," many persons must enter the profession as general practitioners who cannot afford funds for the purpose, or who, "from particular circumstances, cannot be expected to bend their minds to those abstruse inquiries, that would enter into the mind of a physician."

He disapproved of the power of granting degrees being vested in the London University; but thinks it should attach to the College of Physicians, as being disinterested, inasmuch as they are not teachers, and as already having the power to grant licenses. Private schools should be regarded as particular colleges; but if they were invested with the power of granting degrees, there "would be a competition for the maximum of acquirement in the minimum of time."

The president of the college is, *ex officio*, a trustee of the British Museum; and, with the four censors, is also a trustee of the Hunterian Museum. He is president of the Vaccine Board, and an elector, with six other official persons, of the Tancred Charity, in which are several scholarships in law, divinity, and physic.

The licentiates of the college are bound to obey its statutes or bye-laws generally; but they have no opportunity of knowing what they are, as far as relates to themselves. The fellows only have access to them. The library is open only to the fellows, and a licentiate can have books "if he will only ask a fellow;" but, continues Sir Henry, we have expended L. 8000 "in improving the college," and "we cannot keep up fires and librarians, and so on," so as to open the library to the licentiates with our present funds. The licentiates do not contribute equally with the fellows to the support of the college; "they pay *nothing but their fees on their examination* to become licentiates;" and yet, on inspecting the Appendix, No. 7 and 8, it appears, that, exclusive of the stamp duty, licentiates pay L. 41, 15s. to the use of the college; while candidates pay L. 25, 1s., and fellows L. 19, 11s., making together L. 44, 12s., which is only L. 2, 17s. more than the payment of the licentiates, which is represented as so trivial; while it does not appear that inceptor candidates, who have all the rights of practice which attach to the other orders, pay anything. With regard to the sum total of the receipts in the three years from July 1830 to July 1833, the payment of fellows and candidates together amounted to L. 516, 16s., while that of licentiates came to L. 758, 2s., which is nearly half as much again.

Candidates, it would likewise appear by the bye-law *De Bibliothecâ*, have access to the library on paying only L. 25, 3s. to the college, though L. 2, 2s. of this seems to be specifically for the library, to which there seems no corresponding sum in the payment of the fellows. Licentiates, therefore, pay L. 16, 12s. more than candidates without having similar advantages; and if they are elected fellows on the nomination of the president, they pay L. 21 in addition to what they paid as licentiates, which makes the aggregate sum L. 62, 15s., or L. 18, 3s. more than the aggregate sum paid on election as fellows, through the class of candidates, in the ordinary way.

Whatever other good reasons there may, therefore, be for restricting the use of the library to fellows of the college, the propriety of the restriction is not borne out by the financial statements of the president.

Many questions were asked about the formation of the College Pharmacopœia, and the propriety of having a general pharmacopœia for the united kingdom. The latter object, as far as Edinburgh is concerned, was about to be realized, when the physician in Edinburgh who had the care of it (Dr Duncan, we presume,) died. Dublin declined co-operation, as they had lately published a pharmacopœia, and sold it to a bookseller. The first pharmacopœia of the London College was, however, published long before 1750, which is the date erroneously attributed to it both by Mr Warburton and Sir Henry Halford.

No religious creeds are excluded from the college; "we ask nothing of their creed whatever;" but those who enter the college through the medium of the universities are necessarily members of the Church of England. There was formerly a sacramental test for the officers; but this is necessarily done away since the abrogation of the Test and Corporation Acts.

The income of the college is about L. 1100 per annum, of which about L. 500 is from permanent property; but the individual fellows, the president informs us, can have no pecuniary interest whatever in the funds. The college is rather a matter of expence to them than otherwise; and yet eleven out of sixty resident fellows hold lectureships or offices, the average consideration for which is L. 22 per annum, or one-half the gross amount paid by fellows on their admission. Sir Henry Halford affirms that there is no restriction in the admission to the fellowship of the college, to graduates of the English universities, or of Dublin; but that there is a prejudice in favour of those graduates, both on account of the general education which they obtain previously to entering on the study of physic, and by reason of the "moral discipline" to which they are subjected, by being domiciliated in the university, where their conduct is a subject of inspection, and can be so readily reported to the college by the official persons under whom they lived. We have no opportunity of knowing how licentiates "have spent their time before they began the study of physic, or where they studied, for they may have got a degree at a university without having resided there." At the English universities, there is an opportunity "of undergoing moral discipline," under proper inspection, of which the great body who come for a license have no proofs to give that they have undergone it. It is "almost impossible" to get information as to the moral habits, and literary and scientific education of such as are not graduates of the English universities. "*If I could have the same satisfactory proofs, I would admit them in the same manner.*"—"You may learn their *scientific and literary acquirements by examination; but not their moral qualities.*"

"The fellowship is the examining body, and that must be taken from the body of licentiates; for every one who comes here does not practise physic afterwards as a fellow of the college, but as a licentiate. Persons are not excluded from the fellowship; I do not know the class of persons who are excluded, who come enabled to pass an examination. We elect into the fellowship or examining body such as we think most likely to do their duty properly."

It is no *sine qua non* for admission as a fellow, that the candidate shall have been educated at one of the English universities. "I protest against that being so held; there is no rule of the kind: they are all licensed; and they all come under the head of licentiates. The moment a person comes from Oxford or Cambridge, if he passes his examination, he is a licentiate." Sir Henry Halford considers no one aggrieved by being refused a fellowship of the college; there is no hardship in it; a gentleman, according to him, has a right to demand being admitted as a licentiate, but not as a fellow; for the college may make what conditions it pleases as to the admission of its fellows. Licentiates and fellows "stand precisely in one and the same footing;" they meet "exactly on equal footing." But if you take "the circumstance of the standing, the licentiate would have considerable advantage. A person going to Oxford, twenty years of age, and a person going to Edinburgh, one of them is licensed in five or six years afterwards, and the other is not licensed till twelve years from the time he enters. The one is getting his bread from the moment he has his license, while the other is spending his time in preparatory study only."

"We cannot learn the moral qualities of persons who have not been educated at the English universities by examination. It is upon that ground that we insist upon the licentiate remaining a certain number of years a licentiate before he can be admitted into the fellowship; for the college requires a residence at a university two years; it requires that a person shall have taken a degree after having been resident at a university for two years; then the college expects that they shall remain on the list of licentiates ten years, that makes twelve. We who go from Oxford or Cambridge are eleven years before we get our degrees, so that that brings it pretty nearly to the same standing. In one case the head of the college at which the person has resided, bears testimony to the moral character of the individual before he presents him for each of his degrees; we think this is counterbalanced by insisting on a licentiate remaining in the eyes of his brethren, to have his conduct observed, before he is eligible to the fellowship."

We have thus given at some length an exposition of the information communicated by the president of the College of Physicians, relative to the constitution and government of that body, and a statement, as much as possible in his own words, of his sentiments relative to College privileges.

The views entertained by Sir Henry Halford on the latter subject are very much those of the fellows at large; and we therefore thought it might save time to dwell more on his evidence than can be done on that of most of the other persons examined. We cannot prosecute the report further, however, in our present Number; but before we conclude, it may be proper to offer a few remarks on some of the most material points which it embraces.

And first, we would ask, whether the small degree of real value, which the president professes to attach to the class of fellows of the College above that of licentiate, corresponds with the extreme attachment which he exhibits to corporate privileges, that is, to these privileges with which the College, by virtue of its power of making bye-laws, has invested itself? and it would almost seem, from the disinterested manner and tone in which the business of the College is vaunted to be carried on, that there is a species of self-devotion in exercising the duties attached to the governing body. Exclusiveness was once a boast of the college; but now the most anxious care seems to be exhibited to show that the existence of this principle is a mistake and misapprehension. All are professed to be equally licentiates after passing their examination, without any sort of difference arising from the place in which they studied; and yet the one is called a candidate, the other a licentiate; and there is no sort of doubt that the former would repudiate the title of the latter as degrading and offensive. The one necessarily leads to a fellowship of the college, the other does not; and to say that, because the candidate has the liberty of practising conferred on him by the instrument of his appointment, he is therefore a licentiate, is not a straight-forward view of the matter, and evidently overlooks the obvious principle, that the privileges of the higher rank must necessarily comprehend those of the lower. The candidate is admitted "in ordinem candidatorum," and has granted to him the "liberam facultatem et licentiam, exercendi scientiam et artem medicam juxta formam statutorum ad hoc editorum;" without the introduction of any words to define the extent of his practice, or to guard against its improper exercise; while the licentiate is merely admitted "*ad facultatem medicinæ in civitate Londino, et per septem milliaria in circuitu ejusdem exercendam.*" It is quite a delusion to consider the instrument of equal and commensurate import; and as if the college thought it important to have an additional hold on the good conduct of the licentiate, which obviously appears in the apprehension of Sir Henry Halford and of the college, to call for continual observation and inspection, the liberty is only conferred with the humiliating stipulation, "*quamdiu bene se gesserit.*"

The admission of a licentiate of a certain age and standing to a fellowship in the college, after previous examination, might be supposed, from the testimony of Sir Henry Halford, to be with a *bona fide* intention, that such age and standing were to be regarded merely as a set off against the longer period necessary for obtaining the degree of Doctor of Physic in the English universities; and yet the facts of the case are entirely at variance with such an opinion.

The parties, in whose favour this bye-law was made, were not informed of its existence till it was elicited many years after its enactment, in the answers to a law plea. The original bye-law was fettered with some unreasonable provisions, which increased the difficulty of its application almost immediately on there being a probability that some persons might have courage to apply for admission into the college through its medium; and we have seen that, on the only occasion when such application was made, it was rendered totally inoperative. But if it were intended that the long period of probation in which the licentiate should remain under the inspection of his contemporary brethren in the metropolis, should place him exactly on the same footing as to his rights of examination as the Oxford, Cambridge, or Dublin graduate, (and such is the unequivocal inference from Sir Henry Halford's evidence,) why is his examination not to be conducted in the same way as that of a graduate of those universities coming in through the class of candidates? But such is not the case. The candidate is examined by the board of censors, which is sworn to do justice; and though there is a provision for such examination, as well as that of licentiates, being conducted before the *comitia majora*,[*] (the body at large,) if the president, vice-president, and censors, or the major part of them should see fit, yet this, as we have already observed, is never done. The licentiate, on the other hand, who wishes to be examined as a fellow, is to be proposed on one particular day in the year only, and the body may object to his being admitted to examination at all, or set aside the question, as in the case of Dr Wells; but if they assent to such examination, it is not to be conducted before the sworn board, as in the case of the ordinary examinations, but by the *president or vice-president and fellows, at three of the comitia majora, or meetings of the body at large.*[†]

Now we would ask any rational man of the world, who knows any thing of human life, or the human mind, whether the obvious and necessary effect of all these bars and difficulties is not to prevent the fair and *bona fide* operation of the statute in question? If the ordinary examinators are sufficient for conducting the ordinary examinations, why refer to the larger body, except to place, in a very different situation from the candidate, the licentiate thus applying for admission as a fellow. It seemed to be clear that the college, when they were forced into the enactment of a new bye-law, in order to escape from the reprehension to which their exclusive statutes made them liable, were under very serious apprehensions, that admission under it might become too easy. They would even not trust to their sworn examiners, whose just and gentlemanly deportment we have always heard mentioned with praise, when the question related to the admission of a licentiate, in a way which was so decidedly unpopular to the body at large. The college gates, as Sir Henry Halford would persuade himself and the Committee of the Honourable House of Commons, are only placed at somewhat greater distance for the Edinburgh than for the Oxford or Cambridge man, but they open as readily to the one as the other when they are once reached. Yet there is, in fact, discoverable on a nearer approach, such a series of fosses and palisades, of barbicans, drawbridges, and portcullises, and of all the nicer machinery of patent bolts and locks, which the astuteness of the legal mechanist and architect, stimulated by the fears and jealousies of the inmates, have devised to guard the entrance, that, notwithstanding the asseveration of Sir Henry, that the gates would have been cheerfully opened to the hoary-headed applicant for admission, who died before he reached it,—there is much appearance of truth in the observation of the late Lord Ellenborough when Mr Law, that there has been no person admitted. The trials have been many; but nobody has been, or ever will be, through that wicket.

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[*] "Nemo in candidatorum ordinem admittatur, qui non prius examinatus et approbatus fuerit in tribus comitiis *sive majoribus*, *sive minoribus*, pro arbitrio presidentis aut propræsidentis, et censorum aut eorum majoris partis," &c.

[†] Is adeo, si consenserit major pars sociorum, in illis comitiis præsentium, juxta formam pro candidatis usitatam, à *præsidenti vel propræsidente, et sociis in tribus comitiis majoribus ordinariis examinetur.*

The assumed ground of the exclusive bye-law of the college is to insure correct moral habits, and an adequate literary and scientific education in the applicant. But Sir Henry gives up the former when he says "you may learn their scientific and literary acquirements by examination;" and he does so with consistency, because he tells us that, provided the person examined exhibits sufficient medical knowledge, it is not considered of any consequence where such knowledge may have been obtained. Examination, however, gives no information as to "moral qualities, and it is the possession of these which it is the main object of college to insure; and Sir Henry says, that if he could have the "same satisfactory proofs" of the possession of such "moral qualities," in any other way than by the certificates and assurances of any official persons at the English universities, with whom the favoured applicants, those on whose behalf there is an admitted "prejudice," may have been domiciled, he "would admit them in the same manner." This is candid; but let us see what sort of evidence satisfies the sticklers for the purity of manners, for which Sir Henry and so many others of his colleagues contend, as the main, and indeed, according to Sir Henry's admissions, the only exclusive part of the excellence of that education which, is to set at nought the best endeavours to equal it.

We are inclined to doubt whether the characters of gownsmen at Oxford and Cambridge are so pure and immaculate as some persons might infer them to be, from the evidence brought before the Medical Committee of the House of Commons; and we rather fear that, if a confirmation were required of the accuracy of Sir Henry's statements, it could hardly be found among the persons best acquainted with the manners and morals of the ingenuous youth of our English universities; for example, among the worshipful the proctors and their invaluable myrmidons, the bull dogs; among the scouts and gyps of either university, or even among the highly respectable members of the combination Room. We mean not here to intimate that matters are worse at Oxford and Cambridge than at other places; but merely that when large numbers of young men, with warm blood and full purses are congregated, the observance of all the restraints of moral discipline cannot be expected to be the most prominent character of the assemblage.

Sir Henry in one part of his evidence speaks of persons who have got their degrees at a university without having resided there, and contrasts this with the discipline and restraint connected with a residence at college. Before he made this statement, however, he should have recollected that the bye-laws of the College of Physicians require an absolute residence of two years at the university where a degree may have been obtained; and though he admits the inaccuracy afterwards, by giving the correct statement, yet, in strict candour, the inaccuracy should have been distinctly avowed, or the incorrect statement withdrawn from the evidence. But it may be here remarked, that the College has chosen to limit the qualification for a license to a residence of two years at a university; and yet at Edinburgh, from which the greater number of English practitioners are derived, the period has been three years for time immemorial, and is now four. It is not, therefore, fair to adopt a lower standard for the qualification of a licentiate, than the great majority of applicants for a license either actually possess or are willing to obtain.

But what is to be said for the moral discipline of the University of Dublin, where residence within the walls of a college is not necessary for attendance at the university? If residence within college walls be the only safe guarantee of having undergone the moral discipline, which, according to Sir Henry Halford, gives so superior a claim for admission as a fellow of the College, it seems to be difficult to perceive on what principle it is dispensed with in the Dublin graduates. But taking Sir Henry's arguments in their application to the English universities, it might appear to the loose observer, that the English doctor has been subject to a great number of years of rigid discipline and inspection, which must have rendered his principles of rectitude firm and consolidated, and fitted him to emerge from college as an example and a monitor to all around him: and yet what is the fact? He may cease to live in college after three years of residence, and has only afterwards to make his appearance, for short periods, during the progress of his degrees. Where is the moral discipline, then, to which he is subject during the long period of his absence, or the inspection which is to justify the College in supposing, that the character may have undergone no retrocession in the whole of this intermediate period? To assume that a residence of ten years in London is necessary to enable the fellows of the college to judge whether the moral character of a licentiate is of that correct description to warrant his admission into the college, is perfectly puerile. Such a period of probation is not required to justify confidence, in many of the most important relations in life, in those which have the most intimate connection with honour, credit, or property. Nor would the head of the church, among our southern neighbours, be satisfied with a college certificate in behalf of a man who had long left college, to justify their approbation of his character, and their sanction to his views. They very properly require the testimonials of such as lived with, and knew him, without any reference to the period of acquaintance.

The College of Physicians, therefore, according to Sir Henry Halford, act the inconsistent part, of admitting gentlemen at once, to an equal right of practice with their own fellows, which right of practice bears on some the most important and confidential positions of society, in which honour and interest are largely involved; and yet they place the moral qualifications of the individual, which can alone justify such an important trust, in a sort of abeyance for ten years, in order that this may come up to the obscure reminiscences of that moral bearing, which, from the rigid inspection and moral control to which he was subject, must have distinguished the Oxford and Cambridge undergraduate.

The evidence as to the respective periods at which an Edinburgh, or an Oxford and Cambridge physician may get "his bread" by his profession, according to Sir Henry Halford, will hardly be corroborated by any one who knows any thing of the state of medical practice in London. But this important point is to be taken into consideration, which has not been in any way touched upon by Sir Henry, which is, that the graduate of an English university, long before he takes his doctor's degree, can practise in London as an *inceptor candidate*, which affords him all the rights of practice which he can ever afterwards possess, without connecting him at all with the licentiate, who, Sir Henry is so anxious to convince the Committee of the House of Commons, is on a perfect equality with the candidate.

We have already adverted to the difference of character of the instrument given to the candidate and the licentiate, and we would add the important fact, as an evident demonstration. The procedure of the college has, even of late years been to lower the character and pretensions of the licentiate, that the complimentary words "doctum et probum virum," which were equally inserted in the diploma of the candidate and licentiate, by the bye-laws of 1765, were omitted a very few years since, in that of the latter, and the words "quamdiu se benè gesserit" added.

The whole reasoning seems to us, in fact, to be unworthy of the representative of a learned body. It professes what it is unequal to meet; and it would be more correct, and more candid, to put the business on its right footing,—a deeply rooted reluctance to admit any but English and Irish graduates as fellows of the college, than to bring forward flimsy and imperfect arguments in favour of the present bye-laws, as we have had occasion to notice.

Sir Henry conceives that no licentiate has a right to demand to be admitted a fellow,—that he has a right to call for admission as a licentiate,—and that great injustice is done him if he does not receive that according to his qualification. Lord Mansfield is of a different opinion; for he long since stated, that not only is a person entitled to a license if properly qualified, but to admission as a fellow; and the public are also entitled to his services, if properly qualified, as a fellow, and in all the offices to which a fellowship may lead.

Art. VI—*A Practical Compendium of the Diseases of the Skin, with Cases; including a particular consideration of the more frequent and intractable forms of these affections.* By Jonathan Green, M. D., Member of the Royal College of Surgeons, &c. London, 1835. 8vo, Pp. 371.

Though it be the fate of the classification of Dr Willan to be subjected to frequent severe criticism and rigid examination both in this country and on the continent, yet it seems to emerge from every new ordeal as little affected as at its first appearance; and the discordant testimony of each examiner, as to the alleged errors of Willan, with the general concurrence in adopting the great and essential characters of his arrangement, tends merely to prove one point,—that, with all its imperfections, it is still the most judicious in principle, and the most convenient in practical application.

It is impossible, indeed, to imagine a higher compliment paid to the classification sketched, and partly finished, by Willan, or a more unequivocal avowal of its superior merits, than the fact, that every one who writes on diseases of the skin begins with criticising and amending, and terminates in the adoption of all his essential characters. It looks as if all were anxious to remove from a system, otherwise nearly perfect, the few imperfections inseparable from every effort of human skill and learning.

Of those who have felt it requisite to impugn the taxonomy of our learned dermato-pathologist, Dr Green is, by the temperate tone of his remarks, and the moderate and practical character of his emendations, perhaps the most justly entitled to attention. Accustomed for a long series of years to the observation, diagnosis, and management of cutaneous diseases, and particularly habituated to observe the effects of various vaporiform and gaseous agents upon them, he has been led to propose in the classification, pathology, and treatment of these affections, various changes, which deserve the deliberate attention of the practitioner.

The method of arrangement proposed by Dr Green is, as we have already hinted, and as will be now seen, a species of emendation upon that of Dr Willan, with various additions from M. Alibert. The most convenient mode of explaining it to the reader will be by means of the following tabular view, illustrated by the aid of a few remarks.

I. Forms of Inflammation of the skin, and diseases which appear under these severally.	1. EXANTHEMATA.	Erythema, Erysipelas, Roseola, Rubeola, Scarlatina, Urticaria.
	2. VESICULÆ.	Herpes, Miliaria, Scabies, Eczema.
	3. BULLÆ.	Pemphigus, Rupia.
	4. PUSTULÆ.	Variola, including Varicella, Vaccinia, Ecthyma, Impetigo, Porrigo, Acne, Mentagra.
	5. PAPULÆ.	Strophulus, Lichen, Prurigo.
	6. SQUAMÆ.	Pityriasis, Psoriasis, Lepra.
	7. TUBERCULA.	Lupus, Elephantiasis Græca, Cancer, Molluscum, Framboesia.
	8. FURUNCULI.	Furunculus, Anthrax, Pustula Maligna.
II. Diseases which appear with the elementary character of almost all the above orders.	Syphilis.	
III. Diseases which are severally types of new and additional orders.	Pellagra, Purpura, Elephantiasis Arabica, Cheloidea, (Keloide, Alibert.)	
IV. Original or accidental unusual states of the skin, not referable to inflammation.	ACHROA, Leucopathia, (Albinismus,) Vitiligo. DISCHROA, (MACULÆ, Willan,) Lentigo, Ephelis, Chloasma, Nævus.	
V. Diseases of the appendages of the skin; more properly of the parts which secrete and support them.	*Epidermis*, Ichthyosis. *Ungues*, Onychia. *Pili*, Plica.	

In this arrangement the following differences from that of Dr Willan may be recognized.

The order of the several genera is changed, without any change in designation or characters; and by suppressing the order of *Maculae* or spots, and transferring them to another family, the eight of Willan are diminished to seven, and the original number is restored by the separate family of FURUNCULI or boils.

Erysipelas is removed from the order of BULLAE to that of the EXANTHEMATA, " because the *phlyctaenae*, blisters, with which it is so frequently accompanied, being merely accidental to, and forming no necessary part of the complaint,"—" it is too obviously an exanthematous disease." On this point, without dwelling on the inconsistency of the statement, that a character which is admitted to be a frequent accompaniment is merely accidental, and forms no necessary part of the disease, we think it is quite fair to question the justice of the inference, that the appearance of these blebs in Rose is merely accidental; and even although they do not appear in every case, it would form no legitimate reason for rejecting them as a nosological character. The characters of diseases are very much influenced by original intensity, by duration, and by treatment, and other external circumstances; and as characters should always be derived from the best marked examples, the characters of Rose must be deduced from those cases in which the symptoms are most intense and most exquisitely marked. The question is not so much in this case whether every case of Rose is attended with the formation of blebs, as whether any of the diseases with which it is here proposed to associate it are ever attended by that phenomenon; and we know that the reply to this must be in the negative. As well might it be proposed, because the intense fever of the West India Islands presents yellowness and black vomiting in not more than one in twenty cases, to discard these two phenomena, from which the disease derives its two most characteristic epithets, and place it among the ordinary fevers of this country, as propose to connect *erysipelas* with scarlet fever and nettle-rash.

Scabies, or itch, is removed from the family of pustules, and placed among that of vesicles. This change is to a certain extent necessary, in so far as at least one of the species of itch, the *Scabies lymphatica*, is vesicular at least in origin. But it must be observed that even this change will not obviate every objection, in so far as another species, the *Scabies papuliformis*, is not only in its commencement, but in the greater part of its course, decidedly a papular disease; and the inevitable conclusion from these facts is, that itch is a disease papular, vesicular, and pustular, and consequently cannot with propriety be referred to any single head.

In the order of BULLAE or BLEBS, the *Pompholyx* is suppressed: *Erysipelas*, as already mentioned, is removed to the EXANTHEMATA, and *Rupia* is transferred from the VESICULAE to this head. To this change no very serious objection can be urged, unless the fact, that the *Rupia* eruption is at the commencement certainly very like the vesicle induced by the application of the vaccine virus, and afterwards more like a hard, painful, deep-seated conical crust, than a BULLA or detachment of the cuticle of variable size.

In the PUSTULAE, we find the vaccine vesicle transferred from the VESICULAE; and the *Acne* and *Mentagra* or *Sycosis* transferred from the TUBERCULA.

On this point it may be observed, that though the phenomena of *acne* and *sycosis* do not very well fit with the idea of TUBERCLE entertained by physicians, they agree not very badly with the definition of the cutaneous TUBERCULUM given by Willan; and if they differ in some respects from this definition, they differ still more from any of the characters of the pustule. The difficulty now specified, however, would suggest another objection, and a different mode of obviating it. The phenomena and position of the *acne* show that it depends upon inflammation of the sebaceous follicles of the face; and those of *sycosis*, on the other hand, lead to the idea that the inflamed bodies are seated in the piliparous sacs.

The order of PAPULÆ is the same as in Willan; and that of *Squamæ* is deprived of *ichthyosis*, which is referred to the head of Diseases of the *Epidermis*. This is perfectly correct; but the author appears to overlook the fact, that the changes in the *epidermis* is the effect of diseased action in the outer surface of the *cutis vera*, and that the same character is applicable to the other scaly diseases.

Among the order of tubercles, it must be matter of surprise to observe associated two diseases so dissimilar as Yaws and Cancer. One of the two must be in the wrong position; and it appears to us, that though cutaneous cancer does commence in the shape of hard round eminences, which are commonly denominated tubercles, yet they are widely different from the tubercular structure observed in the *Scirrhus* or *Carcinoma* of other tissues. But we remark, in reference to this point, another distinction, which, if not erroneous, is at least in its reason not very intelligible. We should like to know what are the marks of distinction between *Cancer*, which is here referred to the TUBERCULA, and the *Cheloidea*, which Dr Green has adopted from that learned and precise taxonomist M. Alibert, and which he refers to the head of *Diseases which are severally types of new and additional orders.*

In this respect, while Dr Green adopts the nomenclature employed by M. Alibert, he deviates widely from his method of arrangement. M. Alibert, it may be remembered, distinguishes his fifth family of the CANCRODES, or DERMATOSES CANCEREUSES, into two *genera*, the *Carcinus* or cancer, and the *Kelis* or cancroid excrescence, both, he conceives, of a nature sufficiently similar in characters and malignity to go together. Dr Green, on the contrary, places Cancer with Yaws and *Lupus*, the former disease spontaneously curable, the latter admitted very often to be so; while he throws the *Kelis* among a number of diseases of different and opposite characters, and tells us, that "it differs in many respects from cancer," (324,) that "it generally continues indolent through life," (323,) and that "it is not a dangerous disease," p. 324. Surely both views of the nature of this rare affection cannot be well founded.

Then as to the etymology of this term, we find that we can by no means listen to Dr Green, who assures us that it was named *cheloide* or *keloide*, from χιλυς, a tortoise,—without assigning any reason for this etymology. It is, in the first place, quite clear, that, if the term be derived from χιλυς, it ought never to be written *keloid*; and it is not less clear, that if it be written *keloid*, it cannot be derived from χιλυς. Let us inquire into the facts.

Were M. Alibert, to whom we are indebted for the introduction of this term, in any degree uniform in his nomenclature and distinctions, the task would be easy to settle the matter definitively. Had this author written invariably either *cheloid* or *keloid*, or satisfied himself with one good and expressive denomination, it would have been easy to discover the principle on which the name is applied; and when once fixed it must have remained unalterable. But M. Alibert is very unsettled indeed, both in his orthography and in his etymological fancies, and like a number of half-learned persons he gives more trouble by his unsteadiness and want of precision than others do by their ignorance and absolute blunders.

Instead of adopting and retaining one good term for this rare and singular disease, we find that M. Alibert, after giving the two general names according to the French and Latin form,—KELOIDE, *KELIS*, adds the following long and amusing list of synonymes; *Kelos*, *cheloide*, *cancroide*, *tubercules durs*, *cancelli*, *cancroma*, *cancre blanc*, *le crabe;* and finishes the whole by telling us that it is a cancerous affection, distinguished by one, more rarely two excrescences, more or less prominent and resisting, having the lateral margins deeply implanted in the skin, and presenting the aspect sometimes of the cicatrix of a burn. Which term in this case does M. Alibert wish us to select from this multiplied list of names as the correct one? Is it the *cheloid* or the *keloid* disease, the *cancroid* or the *cancroma* that is the proper appellation.

Had the term been invariably written *Cheloid*, then it might have been rational enough to deduce it from χηλη claws,—a term used by Aristotle and Aratus to signify the claws of the crab; and which, if we reflect on the irregularly ramified expansions of this tumour, and the last synonym of M. Alibert, appears not an improbable mode of descent. It is also to be observed, that the term was also used in the plural, χηλαι or claws, upon the authority of Julius Pollux in his *Onomasticon*, to designate a disease consisting of vesicles or blisters and chops of the heels, feet, and sexual parts.* On the other hand, the term Κηλις, *macula*, a spot, was used by various authors to signify a foul scar, or ulcerated mark; and as one of the characters of the *keloid* of M. Alibert is, that its margins sometimes resemble the *cicatrix* of a burn, this may be with most propriety, perhaps, regarded as the term from which M. Alibert has taken the denomination for his rare form of cancroid disease. In either case it is quite clear, that the matter is altogether misunderstood by Dr Green.

The order of FURUNCULI is with propriety made to receive the common Boil and Carbuncle; although we have often seen the carbuncle originating in the adipose tissue, and affecting the skin only in a secondary manner. Dr Green admits, indeed, that, strictly speaking, the FURUNCULI are diseases of the cellular membrane rather than of the *cutis vera ;* but he does not seem to be aware of the fact, that, in making this admission, he places them in the adipose tissue, and deprives himself of the right of placing in the same family of diseases, the malignant pustule or Persian fire, which is assuredly a gangrenous affection of the *corion* or *cutis vera*. In short, Dr Green here places himself in the dilemma of assigning an erroneous position, either to the malignant pustule, or to the boil and carbuncle.

Passing over the second tribe of cutaneous maladies, which embraces all those ascribed to the operation of the syphilitic poison, we find in the third the following four disorders, certainly not very obviously or closely allied ;—*Pellagra, Purpura, Elephantiasis Arabica*, or the Barbadoes leg, and the *Cheloidea* or *Kelis* of M. Alibert. Of the latter we have already spoken, and believe that we have satisfied all impartial readers, that, whatever may be its position, it ought not to be associated either with *Pellagra* or *Purpura*. What alliance Dr Green, indeed, has been able to perceive between the diseases referred to this head, we acknowledge our inability to suggest. But we think he might at once have discovered, that the *Elephantiasis Arabica*, in which the skin is only secondarily affected, is not a primarily cutaneous disorder. What is the true nature of this malady, it is certainly not easy to say. It is well known that Dr Hendy considered it as an affection of the lymphatic and glandular system,—an idea to which he was probably led by the great influence ascribed, at the time at which he wrote, to the lymphatic system, in the production of disease. Dr Musgrave of Antigua, took a more natural view of the disorder, by regarding it as the effect of a particular form of inflammation, affecting periodically the cellular or filamentous tissue of the leg. But though this view is more natural, it still requires some points to be determined, in order to give it perfect accuracy. Under every view, however, we must say that it is impossibe to regard this complaint as a primary affection of the skin, any more than as one of the lymphatics and the lymphatic glands.

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* Χηλαι, η φυσιγγες, ῥαγαδες, πτερνων, ποδων, ᾿αιδοιων. Lib. iv. cap. 25.— Julii Pollucis Onomasticon.

We have felt it to be our duty to consider in this manner the changes of arrangement proposed by Dr Green, for several reasons.

It has become a sort of fashion to depreciate the classification of Dr Willan below the rank which it has long held, and to exalt greatly above their just merits, those of Alibert, and several of the recent foreign dermato-pathologists. We do not propose to assume the grave duty of deciding on points on which it is so difficult to form an opinion, and on which so many have dissented, and will continue to dissent. We do not think that it is possible at the present moment to come to any conclusion upon the matter. It can only be, we are convinced, after a long series of years probation, after the system of each candidate for professional attention has undergone deliberate and careful examination, and after the merits of each have been weighed in the just and impartial balance of time, that it will be known how far the method of Willan gives a natural or an incorrect view of cutaneous diseases, and which is the one most suited for practical diagnosis and treatment. So far as the attempts of succeeding writers have gone, we think that the result shows, that they have in general been right when they have imitated the method of Willan, and have involved themselves in many errors and inconsistencies, whenever they have deviated very widely from that system.

Dr Green very justly regards all cutaneous diseases as accompanied with symptoms of acute or chronic inflammation; and he with propriety applies this principle in regulating the method of treatment. He further allows that every form of acute cutaneous inflammation is accompanied with symptoms of general disorder, more or less severe. He questions, however, in several, and denies in many, especially the chronic eruptions, the existence of any disorder of the digestive organs, such as is often presumed or believed in this country to give rise to cutaneous disorders; and appeals to the authority of Rayer and Biett in confirmation of the principle, that the great majority of chronic and inveterate diseases of the skin occur without the slightest disturbance of the digestive organs. He equally denies the justice of the proposition, which represents diseases of the skin as dependent on the morbid state of any other organ or set of organs, and maintains, that all that can be inferred from any of the facts adduced by the advocates of this hypothesis, is, that diseases of the skin are frequently complicated with affections of different internal organs.

"Such examinations," he observes, "as have been made of the bodies of those who have died while labouring under chronic affections of the skin, do not exhibit morbid alterations of the lungs, stomach, uterus, &c. in other proportions than similar lesions are known to occur under different circumstances, and in subjects who have fallen victims to a hundred dissimilar diseases."—P. 10.

From all these facts and considerations he infers, that the causes of cutaneous diseases are very obscure. He admits, nevertheless, the influence of the operation of certain direct and manifest causes, such as sudden changes of temperature, the application of pulverulent and stimulating substances to the skin, exposure to bright solar light, or intense heat, and the effects of particular climates, local positions, and modes of living, in the production not only of morbid states of the skin in general, but of particular forms of cutaneous disease.

In sketching his general system of therapeutic measures for the removal of cutaneous diseases, Dr Green keeps in view the pathological principle already stated, that they are essentially inflammatory affections; and he very properly carries this principle the length of admitting the benefit of general blood-letting as a preliminary measure even in the management of the chronic cutaneous disorders, and local blood-letting by means of leeches in the vicinity of the morbid integument.

We do not recognize the same natural connection between the etiological doctrines and the therapeutic measures of Dr Green in his recommendation of the benefits of restrained diet, temperance, and even abstinence, and the hunger cure, as it is denominated, of the German physicians. We have already seen, that he denies the influence of morbid states of the digestive organs in producing or maintaining the chronic cutaneous diseases; yet he admits the beneficial effects of strict regimen in effecting their removal, and allows that the disease returns as the attention to dietetic restraints becomes relaxed and interrupted. Assuredly, if, from the effects of the *Juvantia* and the *Laedentia*, it be permitted to draw any positive conclusions regarding the etiology and pathology of diseases, the inference from facts of this description must be, that, in cutaneous diseases, which are alleviated and removed by due attention to regimen and diet, there is rather strong reason to believe, that morbid states of the alimentary canal and its functions have some influence on their production, and probably on their persistence.

In the adoption and effective application of one description of therapeutic agents, Dr Green, though not original, has very great merit. We allude to the employment of those agents which act directly on the cutaneous surface in the shape of baths, aqueous and aerial, tepid and hot, simple and medicated, vaporiform and gaseous. No doubt can be entertained of the efficacy of these methods of applying remedies, considering the success with which their use has been attended under the auspices of De Carro at Vienna, Dr Wallace at Dublin, M. Gales at Paris, and Dr Bardsley at Manchester; and it is quite clear that many diseases of the skin which are quite untractable under the ordinary remedies, speedily yield to agents applied in this manner. The testimony of the present author, who has adopted this method of treating cutaneous diseases in London on a very extensive scale, and in many affections not heretofore supposed to admit their use, is not less decisive, and must satisfy every candid inquirer of the great and very uniform efficacy of the method.

The medicated baths most frequently recommended by the present author, are the sulphur fume bath, the chlorine vapour bath, and that of the vapour of the sulphuret of mercury.

Though it is quite unnecessary to enter into the detail of the pathological and therapeutic principles inculcated by Dr Green in the history of individual diseases of the skin, we shall endeavour to select for notice those peculiarities, which, in a practical point of view, seem most to deserve attention.

Erysipelas taking place in persons of flabby constitution, bloated appearance, and rather impaired strength, in whom the antiphlogistic and evacuant treatment are either not admissible, or can be adopted only to a limited extent, he treats successfully by means of the sulphur fumigating apparatus.

If the Nettle-rash resist the employment of ipecacuanha in emetic doses, followed by the use of the vegetable acids, with the local application of the cold solution of acetate of lead or subcarbonate of potash, that eruption also is opposed, apparently with great success, first by the hot air bath, and then by the sulphur fume bath. In the intermittent form of the disease the antiperiodic powers of the arsenical solution are eulogised.

In the treatment of itch Dr Green recommends as substitutes for the disagreeable sulphur ointment, the sulphureous water bath, an ointment composed of sulphuret of lime and olive oil, rubbed twice daily on the palms of the hands, the wash of sulphuret of potash with or without a small proportion of the sulphuric or muriatic acid, and lastly, the sulphur fume bath, once, twice, or three times daily,—which is represented as not only the most effectual and expeditious remedy, but one which aids powerfully the operation of all others.

In obstinate cases he recommends blood-letting and cathartics as means of facilitating the operation of other remedies on the system.

The account of *eczema* presents several useful and important observations; and we observe with pleasure that, for the speedy and effectual removal of this disease, the author recommends antiphlogistic measures in the form of general blood-letting and depletion from the neighbouring parts by means of leeches.

In the chronic and inveterate forms of the disease, the internal use of sulphuric or nitric acid with dietetic measures, is represented to be highly beneficial; and Dr Green also inconsciously admits in this case the influence of some morbid state of the alimentary canal, by bearing testimony to the good effects of long-continued gently purgative doses of the neutral salts, and the antacid powers of the *aqua potassæ*, given in doses of ten drops twice daily. Among other internal remedies from which the author anticipates benefit in some of these chronic forms, are mentioned the decoction of bitter-sweet *(Solanum Dulcamara)* the tincture of cantharides, and the arsenical solution. The local external applications, in the use of which Dr Green places most reliance, are the alkaline bath, consisting of from four to eight ounces of subcarbonate of potass dissolved in thirty gallons of tepid water, the sulphureous water bath, and the vapour bath or *douche*, though with great caution and care in observing its effects. The hot air and sulphur fume bath he represents to be rarely applicable.

An opinion delivered by Dr Green regarding the prognosis in *ecthyma*, gives proof of some degree of inconsistency. *Ecthyma* he represents to be in itself not dangerous; but sometimes to indicate a state of the constitution that inspires serious fears for the patient's safety. According to our own experience and observation of *ecthyma*, it is always symptomatic of some disordered state of the general health, and consequently can in no circumstance be viewed merely by itself as an independent and primary cutaneous disease. When, therefore, the physician sees a case of *ecthyma*, he instinctively reverts to the probable state of the different internal organs, employs all his diagnostic ingenuity to discover their condition, and, almost disregarding the mere eruption, directs the great force of his remedies to rectify the deranged functions, and re-establish the tottering health. It is in accordance with the principles now stated, that we find Dr Green afterwards stating the proposition, that, " if the general health improve, little trouble is usually required to subdue the *ecthyma*." In every case of *ecthyma*, indeed, the first and essential object of the practitioner is the restoration of the general health. The local management, though not to be neglected, is entirely secondary. Is there such a disease as idiopathic *ecthyma?* We should doubt it much. Dr Green, however, seems to believe that there is.

For the removal of *impetigo*, the moist tetter, besides the means in ordinary use, Dr Green recommends as an infallible remedy the sulphur fume bath, which, though like other remedies at first trial, apparently ineffectual, begins at length, after continued and persevering use, to make a decided impression on the disease. It is admissible both in the crustaceous and raw state, and it abates the itching, and diminishes the acrimonious discharge,—circumstances from which Dr Green concludes that it exercises as to this disease a sedative effect.

A most remarkable instance of the effect of excess and errors in regimen in generating and maintaining, and even in reproducing this disease, is given in the author's second case, p. 148; and it must appear to all unbiassed readers as a fact quite opposed to the etiological principles delivered by the author.

An old gentleman, nearly 60, of what the author terms a gross robust habit, applied in June 1832 for the advice of Dr Green on the means of removing an attack of *impetigo sparsa* of eight years duration. By means of general blood-letting, the daily evacuation of the intestines by means of a cathartic mixture, regulated diet, and the daily administration of the sulphur fume bath, the eruption was thoroughly removed by the 30th of the month. The sequel may be given in the words of the author.

> " To celebrate this redemption from his long-continued and harassing complaint, my worthy patient gave a grand feast to his numerous friends, who were invited to rejoice with him on occasion of his happy recovery. Moderation is difficult in the hour of victory, and my patient committed an excess, which after twenty-four hours brought on an almost general attack of inflammation of the skin, followed by a copious eruption of pustules; so that he returned depressed in spirits to resume the former treatment. In the short space of eight days this active and general accession of disease was completely subdued, and all remedies were left off."—P. 149.

These details form a sort of antidote to the principles promulgated in the general doctrines.

For the removal of *acne*, which is always a very obstinate disease, Dr Green recommends, besides the usual means of Goulard's lotion, or the alcoholic solution of bichloride of mercury, the local abstraction of blood by means of leeches applied behind the ears, the hot air and hot vapour bath, the local application of an ointment consisting of calomel, sal-ammoniac, and hogs-lard, or ointment of ioduret of sulphur, and the application of blisters, with the observance of an unstimulating regimen and tranquil mode of life,—remedies by far the most effectual.

In the management of *prurigo*, or itching rash, Dr Green inculcates the observance of similar therapeutic principles, and, above all, the persevering employment of the sulphur fume bath, which, indeed, is in his estimation the great therapeutic agent in almost all the morbid states of the cutaneous tissue.

Under the head of *diseases appearing under a variety of elementary forms*, we find rather an interesting account of the various cutaneous eruptions which are attributed to the operation of the poison either of gonorrhœa or of syphilis received into the system. The manner in which Dr Green discusses this subject involves the consideration of several preliminary questions; and as our limits will not permit us to enter on this subject in a manner adequate to its importance, we must be satisfied with a general reference to the section.

The observations which we found it our duty to offer at the commencement of this article, apply principally, if not exclusively, to the nosological and taxological department. We feel it requisite to say, that they do not affect the therapeutic department of the work, which is evidently both the most original as well as the most valuable. Its value consists in the number and form of effective remedies with which Dr Green has enriched the therapeutics of cutaneous diseases, and in the hopes which, from extensive personal experience, he holds out to the practitioner, of enabling him to cure diseases which have hitherto been too often abandoned in the apathy of despair, or wearied the patience of the most persevering practitioners. It is almost superfluous to say, that every professional reader who wishes to be successful in the management of cutaneous diseases, will find it his interest to study thoroughly the method of treatment recommended by Dr Green, and to distinguish well in practice the circumstances under which its varieties are applicable.

ART. VII.—1. *The Principles of Physiology applied to the Preservation of Health, and to the Improvement of Physical and Mental Education.* By ANDREW COMBE, M.D. &c. Edinburgh, 1834. 2d Edition, 1834 and 1835.

2. *Lectures on the means of Promoting and Preserving Health, delivered at the Mechanics' Institute, Spital-Fields.* By T. HODGKIN, M.D. London, 1835. 12mo. Pp. 449.

THESE two works may be mentioned together, as both agree in the object kept in view by their authors, namely, the dissemination, in a popular shape, of that form and degree of medical knowledge which is adequate to the preservation of health.

In the work of Dr Combe, which appeared first, the author explains in a general manner as much of the structure and functions of the human body, as is requisite to elucidate the Hygienic principles necessary to be known by individuals, by masters of families or manufacturers, by officers of the army and navy, and public functionaries generally; and deduces from these such practical rules as are requisite to proper physical and moral education,—to the attainment of the greatest possible degree of bodily health and strength, and the highest rate of mental energy and cultivation. These objects are carried into effect in nine separate chapters in the following order.

After an introductory view, in the first chapter, on the nature, objects, and utility of physiological knowledge, Dr Combe considers the structure and functions of the skin, its connection with the nervous system, its influence upon health, and the necessity of preserving it in a sound state; the structure and functions of the muscles with the effects of exercise, and the different forms adapted for particular purposes; the structure and functions of the bones; the function of respiration, the production of animal heat, and the circumstances which favour and prevent the formation of diseases of the lungs; the structure and functions of the different divisions of the nervous system, the consideration of the means requisite to maintain its healthy state, and the influence of the nervous system on the general health of the whole frame; and, lastly, a short sketch of the causes concerned in the production of bad health, with a view to prevent their operation, or counteract their effects.

Into the consideration of these subjects Dr Combe has entered as fully as the nature and limits of his treatise permit, and he has given very interesting and instructive illustrations of the principles which he inculcates. It is some proof of the merit of this performance that it speedily attained the second edition, and has since been republished in America with annotations.

The analogous treatise of Dr Hodgkin consists of four lectures, within the compass of which the author has contrived, by means of a condensed mode of writing and close printing, to communicate a large proportion of very instructive information.

The first lecture consists of a short and pithy introduction, and a luminous exposition of the necessity of attention to air, to light, to habits of cleanliness, civic, domestic, and personal, to adequate clothing, and the influence of these agents on the function of respiration and the general health.

The second lecture, on articles of food, gives a short view of the nature of the process of digestion, followed by very minute and detailed accounts of the comparative nutritious properties and effects of different kinds of articles of food and drink; the different kinds of diet; the necessity of temperance and occasional abstinence; the effects of excess; the diseases produced by excesses in eating and drinking; the nature, properties, and effects of vinous and spirituous stimulants; the use of tobacco and similar excitants and sedatives; the use of opium, and some judicious remarks on quack medicines. The observations on the pernicious effects of the habitual and excessive use of spirituous liquors are extremely interesting, and when considered in relation to the class of society to whom the lectures are addressed, cannot be regarded but as of the greatest utility.

In the third lecture, on Muscular Motion and the Intellectual Faculties, Dr Hodgkin gives, after a short account of the bones and muscles, very just and interesting illustrations of the effects of exercise, and its influence on the circulation; the influence of particular laborious trades and occupations, and those in which the individuals are inactive or sedentary; then considers the effects of cold and heat, and the means of protection against the extremes of either, gymnastics, and robust sports, and the effects of war. He next proceeds to explain the structure and functions of the nervous system, the nature of the sensations, and the intellectual and moral faculties, and the best means of improving and maintaining their energy; enters pretty largely into the value of education, and the best mode of conducting it, and the compatibility of a considerable degree of it with close attention to, and exact performance of, all the active duties of life, with some observations on the beneficial effects of mechanics' institutes, both on the individuals themselves and on society; and he sums up the whole with a correct and useful view of the nature of health in the most just and extended use of the term, as signifying the highest perfection and most consummate energy of all the organs and functions of the body, and all the faculties of the soul, mutually co-operating in the same individual.

The fourth chapter is an exceedingly interesting and valuable one. Under the title of the Successive Generations and Education of Youth, Dr Hodgkin, after beginning with some observations on the indispensable necessity of enforcing a rigid regard for practical morality, touches with great art and delicacy on the pernicious effects of disregard to the obligations of personal chastity, so prevalent among the young of all classes, and the manifold examples of incurable disease, irreparable misery, and premature death which may be traced directly or indirectly to this cause. He then adverts to the management of the aged and infirm, to that of the young, in the various periods of infancy, childhood, and youth; considers the best modes of training both the corporeal organs, and the mental faculties, and moral feelings; directs attention to the utility of studying early the various departments of natural history and physical science; and concludes with some valuable observations on the education of females, and the necessity of enlightening their minds, in order to render them useful to themselves, and qualify them for the duties of life, in whatever capacity.

It is impossible in this abstract to communicate any thing like an idea of the information here collected by Dr Hodgkin, and the familiar and intelligible mode in which it is conveyed. For that purpose the book must be read; and we are certain, that few will begin without proceeding to finish, and that few will be satisfied with a single perusal.

Besides the manifold apposite illustrations in the text of the lectures, we find appended to each, annotations illustrating the nature of some subjects which are either too complex, too extensive, or otherwise unfit for explanation in the course of lecture. Of this nature are some very judicious observations at the close of the third lecture, on the injurious effects of Trades Unions, on the exercise of the elective franchise, and on the necessity of honesty and attention to economy.

In conclusion, though these lectures were addressed to a particular class of the community, there is no individual or class of individuals who will not find it their interest to study and apply the principles so ably laid down by the author.

Art. VIII.—*Pathological Researches on Phthisis.* By E. Ch. A. Louis, Doctor in Medicine of the Faculties of Paris and St Petersburg, Physician to the Hospital of La Pitié, &c. &c. Translated from the French, with Introduction, Notes, Additions, and an Essay on Treatment, by Charles Cowan, M. D. E., M. D. P., &c. London, 1835. 8vo, Pp. 388.

In our twenty-seventh volume (Edinburgh Medical and Surgical Journal, Vol. xxvii. p. 401,) is given an account of the contents of the original of the work of M. Louis on Consumption, especially its anatomico-pathological department, as minute as the limits of our pages admit, with strong recommendations to every one desirous to understand the nature and pathological relations of that disease to study the work itself with attention. The appearance of the work in an English translation suggests the propriety of repeating this recommendation, which is now by this means rendered more generally practicable. We do so the more readily, that the great and acknowledged value of the original, combined with the manner in which it is now presented to the English reader, promises to supply what every one acquainted with the subject, must regard as a chasm in the medical literature of England on phthisical diseases.

Though the account of the most important contents of this treatise already referred to, supersedes the necessity of entering into any details on the present occasion, it may be proper to specify shortly the principal characters of the work of M. Louis, and of the translation by Dr Cowan.

The great value of the work of M. Louis consists in the elaborate illustrations of the morbid anatomy of phthisical subjects in all the stages and all the varieties of the disease, which the indefatigable research of the author has enabled him to furnish; and the accuracy with which he has studied to determine in numerical proportions, among a great number of the dead bodies of those cut off by this disease, the comparative frequency of the lesions of different organs.

By comparing, in the same manner, the assemblage of symptoms, the operation of different causes, and the merits of different methods of treatment, and different remedial agents, M. Louis has been enabled to furnish the most correct description of the essential and accessory phenomena of the disease, and to give a just view of the etiology and treatment.

Not only has Dr Cowan performed his duty of translator with great accuracy and attention, but he has considerably augmented the value of the work of M. Louis by the insertion of much judicious and instructive information in the shape of additions to the text, and notes. We find particularly on the subject of the Causes of Consumption, that Dr Cowan has collected many interesting facts from Benoiston de Chateauneuf, Chabrol, Papavoine, and the late Dr Darwall of Birmingham; from M. Lombard, the late Mr Thackrah, and Dr Rush; and on the subject of treatment he has furnished, in addition to the observations of the author, an article completely new, giving a general view of the results of the observations of physicians upon the effects of different remedies and methods of treatment.

By the additions now specified, Dr Cowan has rendered the work of M. Louis a complete monography of *Phthisis*, exhibiting a view of the present state of medical knowledge on the etiology, pathology, semeiography, and therapeutics of the disease; and to this the practitioner and student may confidently refer for information on every point of theoretical or practical importance.

It is almost unnecessary to say, that, while we recommend this work to the serious attention of our readers, we do not thereby signify our perfect and unqualified adoption of all the principles explained, and practical inferences deduced. Upon some points, indeed, in the principles regarded as proper to regulate the treatment of pulmonary consumption, we cannot entirely agree either with M. Louis or his translator. But as it would be impossible at present to explain satisfactorily the reasons of our dissent, we think it more judicious not to enter on the subject at all, than to advert to it in a hasty and imperfect manner. On some future occasion, we may take the liberty of soliciting the attention of our readers to this matter, when we can do so with a more reasonable hope of being listened to with patience, if not of producing complete conviction.

Art. IX.—*An Exposition of the Nature, Treatment, and Prevention of Continued Fever.* By Henry M'Cormac, M.D. London, 1835. 8vo. Pp. 202.

Though Fever be assuredly the most common and frequent disorder incident to the human race, and though it be that upon which the greatest number of books, both good, bad, and indifferent, has been written, it still possesses sufficient interest to give rise to new inquiries and new treatises; and every one is anxious to know whatever views most new or most recent have been entertained on its nature, and the method of treatment. The nature of this disease is indeed so obscure, and so difficult to be understood, that it never ceases to afford ample scope for investigation and reasoning; and notwithstanding all the information and experience that the most assiduous inquirers have been able to collect, there is still sufficient field for the observation and research of the accurate observer and original inquirer.

Though the author of the performance now before us does not attempt to describe any particular febrile epidemic, and studies rather to give a general description of the disease, and especially that form to which the denomination of *Typhus* has been particularly restricted,—his work will be perused with great interest and advantage, in so far as he illustrates and generalises with great learning and ability the observations and experience of all the most eminent pyretologists, ancient and modern, foreign and domestic. Dr M'Cormac, indeed, possesses the advantage of personal experience not only of the ordinary form of fever in these countries, by his position as physician to the Fever Hospital of Belfast, but of the more rapid and formidable variety of disease prevalent in Africa and other tropical countries; and minute and extensive acquaintance with the pyretological authors not only of France, but of Italy and Germany, has enabled him to illustrate his subject with a degree of literary information not very common in this country.

Dr M'Cormac has not distinguished his treatise into particular divisions so methodically as he might have done; but it is not difficult to trace the order in which he treats the subject, to be very nearly the following.

The Semeiography of the disease first occupies his attention, and he describes the forms of deranged action as they are manifested in the disorder of the different functions separately and successively. He then adverts to the subject of exacerbations or aggravated forms of the assemblage of phenomena, the superinduction of other diseases, the duration of fever, and the circumstances by which it is influenced, (p. 34–38;) critical terminations, the etiology of febrile diseases, and the consideration of the circumstances under which they are known to arise, (39–51;) the question of epidemic influence, and whether these epidemic diffusions of the disease depend upon terrestrial emanations or atmospheric agency, the question of the propagation of the disease by means of contagion, (53–58,) and, lastly, the subject of susceptibility, (58–59.)

He then, after sundry critical remarks upon the danger of hypothesis and erroneous reasoning, proceeds to consider the subject of the Pathology of Fever; but we do not perceive that he arrives at any definite general conclusions. He rather assumes than demonstrates the proposition, that the principle of fever, whether poison or whatever it be, strikes the nervous system more or less forcibly, and either impairs, or suspends, or completely annihilates its energy. He admits his inability to determine whether the affection of the organs of respiration and circulation depends on this impaired nervous energy or not, and he leaves equally undetermined the question as to the derangement and suspension of the different secretions. The blood he represents, in common with most other physicians, to undergo very considerable changes,—becoming thin and watery, and void of its usual proportion of fibrine.

He then proceeds to advert to the relations between fever and other diseases, and adverts more particularly to the affections of the lungs and intestinal tube. The remarks of Dr M'Cormac on the former may communicate some idea of the manner in which he investigates the subject.

"When pulmonary affections are associated with fever, they may be of different forms. That febrile disorders are very frequently complicated with such affections, is unquestionable; but not so invariably, I think, as some writers give us to understand. These complications have been divided into those purely bronchial, and inflammation of the parenchyma of the lungs. But the ramifications of the bronchia are so minute, as seemingly to include no inconsiderable portion of the so-called parenchyma itself. Some pathologists are of opinion, that a special bronchitis exists in most fevers, but others entertain a different sentiment; the point does not seem to be determined. The change in the state of the blood has been attributed to the condition of the bronchial lining, and the increased tenacity of the mucus which covers it; but for my own part, I should think that this resulted as much from the aforesaid state of the blood, as that the latter was occasioned by it. Doubtless, when once the bronchial lining is in any degree morbidly affected, it helps to deteriorate the blood still more; and we are not guilty of any great assumption in presuming that the influence of the atmospheric air on this vital fluid, and of the latter on the air, must be in some degree modified by the state of the membrane through which this influence is exerted—though I think we are at the same time bound to admit, even in this case, that it is only one of the secondary sources of the deterioration in question. But actual pneumonia often ensues in fever, sometimes with such frequency indeed, as to characterize whole epidemics; it is more commonly, however, occasional. It is always a dangerous and very often a fatal complication. I have seen very many patients destroyed by it. It is obviously more frequent in cold or changeable, than in warm weather. Medical men are often called in too late to be of use. From time to time patients are sent to the hospital which I attend, in various stages of this affection, sometimes with extensive hepatization of the lungs. Their ignorant relatives are commonly unaware of their danger, which they have perhaps aggravated, by giving wine or other strong drink: or possibly they have been unable to obtain early professional aid. The influence of the disability of so large a portion of the respiratory apparatus, to discharge its functions, must be very great; it is in some measure compensated for, however, by the greater activity of the remaining portions, when these are comparatively free from disease. Both lungs are sometimes affected, in which case, the worst results are to be apprehended.

" It is said, and with much justice, that the inflammations in fever are of a different character from those which take place idiopathically, or without fever in the first instance. Certainly they will not always bear the same activity of treatment. But are we entitled to affirm that the inflammation which superinduces fever, perhaps eventually of a typhoid cast, is always different from the inflammation which often occurs in fever—I should think not. Many are of opinion that the alteration which takes place in the blood, causes the inflammations which occur while it is in this state, to assume a different character; certainly in so far there will be a difference—but is it ascertained that there is any other? Different German and English pathologists think, that the blood in consequence of not undergoing the usual changes, acquires a narcotic character; but although I would agree with them as to the facts which this term is intended to indicate, I should prefer simply recounting them without using it, as I consider that to assume unnecessarily the existence of an uncertainty, is rather calculated to lead us into error. Assuredly the alterations which the blood undergoes, as also its decrease, a fact which seems to be occasionally overlooked, must occasion marked changes in the processes of innervation, if not a partial suspension of them. The excessive diminution of the mass of the blood, from wounds, venesection and flooding, is known to cause convulsions, loss of vision, hearing, and other nervous phenomena; now in the latter stages of fever, there is not only a great change in the constitution, but also, as I have just observed, a notable diminution in the quantity of the blood. The universal prostration, *Lähmung*, as the Germans expressively term it, which occurs in that form of fever called typhus, must undoubtedly be mainly occasioned, by the excessive vitiation of the vital fluid.

"It is wonderful how late pneumonia will occasionally ensue in fever: I have seen it take place on the twentieth day, and prove nearly fatal. It is unaccountable how such a process can be set up in such opposite conditions of the animal economy—robust health, the one extreme—and a state of the lowest and most miserable depression, the other. Andral and many other observers as well, have seen fatal pneumonia ensue during convalescence."—P. 74, 76.

At a subsequent stage of his observations, he gives a short sketch of the morbid anatomy of the disease, with the frequent repetition of the precautionary observation, that we cannot from this alone succeed in understanding the true and intimate nature of Fever. Among these appearances, he devotes a large space to the description of the morbid lesions of the gastro-intestinal mucous membrane; and, though he does not overlook the traces of congestion or inflammation of the intestinal mucous membrane or of its follicles, he inclines to the opinion, that as the follicular disease is not peculiar to fever, but occurs in consumption and scarlet fever, it is impossible to regard gastro-enteric inflammation, or *dothinenteritis*, as the pathological cause of fever. (P. 87.)

Dr M'Cormac next proceeds to the subject of the Diagnosis of fever from other diseases with which it is liable to be confounded, and from those with which it is apt occasionally to be complicated. After adverting to the existence of the form of the disease denominated *irritation* by Mr Travers, and irritative fever by Mr Butter, and which is merely the fever symptomatic of the inflammation of the adipose tissue, he alludes briefly to the similarity between fever and the *meningitis* of infants, or *hydrocephalus*, and fever, and remittent fever.

Though he allows congestion a place in fever as a mere modification, or peculiar state or states of that disease, he does not think that it is sufficiently important to authorize pyretologists to adopt this circumstance as the distinguishing character of a separate order of febrile maladies.

He dwells much, though rather unintelligibly, on the danger of overlooking inflammation occurring in the course of fever, and on the difficulty of recognizing its presence, its nature, and extent, particularly in the bowels; and this difficulty, he tries to explain, by ascribing it to the altered constitution of the blood, and the consequent impaired sensibility of the nervous system.

"The sense of pain," he judiciously observes, "is lessened and abolished, owing to the state of the brain and spinal nerves; the other phenomena of life, depending on the sympathetic nerves, are not performed in the usual manner, and consequently the usual evidence is not afforded." He does not allow, however, that this state of the blood is produced by the condition of the *bronchia*, solely or principally. Upon this, it may be asked, whether it is possible for the brain and spinal chord, and nerves, to retain their sensibility and influence over the system at large, when they are receiving by their vessels, blood which is every hour becoming more vitiated and less fit for sustaining their energy?

He makes, however, a nearer approach to the true solution of this difficulty, when he observes a little after, that one inflammation sometimes masks another, and that an affection of the brain may render a co-existing morbid condition of the lungs or bowels less distinct, and that inflammation, for instance an attack of *pneumonia*, that is, we presume, occurring in the course of, or in complication with fever, may be entirely latent. The truth is, that such masked and latent inflammations are daily observed in cases of fever, and they require the physician to keep his diagnostic sagacity and circumspection in constant vigilance, in order to detect their existence, and take means for counteracting their pernicious effects. The explanation, not of the occurrence, but of the latent character of these inflammations in fever, we think is pretty obvious. The fact of their occurrence is well understood by the author, who makes several interesting observations on them at p. 99 to 100, and afterwards alludes to the cause of the delitescence in the following passages.

> "As a general rule, it may be here observed once for all, that in the course of fever of low excitement, frequently called typhus —or when prostration sets in during the course of fever, the pain attending all inflammatory or other organic complications, is little or none."—Pp. 105.
>
> "If an affection of the brain subsist, it may mask the most severe thoracic inflammation; and in like manner, a similar affection may conceal, or help to conceal, destructive disorganization of the abdominal viscera. I do not here speak of the inflammatory condition of the brain or its membranes alone, but of that peculiar functional lesion which this all-important viscus undergoes, when exposed to the deteriorating influence of impure and undecarbonized blood. It must be quite certain that this wonderful organ and its appendages, the spinal marrow, ganglionic system, and nerves generally, will be quite incompetent to the adequate performance of the indispensable process of innervation—and consequently, that it will be unable to afford the proper supply of nervous influence, either as to quantity or quality, to the different organs—or to re-

ceive back the various modifications impressed upon it as in health, by the animal economy, whether as to pleasure or pain—or those numerous indifferent sensations, the transmission of which are probably in some way essential to our corporeal well-being. Thus, therefore, inflammation will go on without exciting pain, or that reaction, which, in a less intense state of disease, would at once betray its existence. I need hardly remind the reader, that a certain supply of sufficiently healthy nervous influence, to the organs, both individually and collectively, is indispensable to the preservation and continuance of life: and reflecting upon this necessity, it becomes subject matter for the most lively surprise, how nature, in many cases of bad fever, contrives to secure sufficient for the purpose." Pp. 107.

In this manner Dr M'Cormac at length arrives at the true explanation of the latent and obscure character of these inflammatory affections which take place in the course of fever.

He then attempts to appreciate the true relation of these local affections to fever, and to consider whether there be any evidence to determine the question as to their being constant, or as to their giving rise to the symptoms of the disease. The observations made on this subject deserve the consideration of the advocates for the essential presence of local disease.

"After what has been said, we may here venture upon a few observations, as to the amount of evidence for those hypotheses, some of which affirm that fever is the inflammation of one particular organ, and others, that it is the inflammation of one or more, among several. This is a question which, in the present state of medical science, I am of opinion, does not require much to settle. Is it not admitted by all parties, that there are two distinct states of the animal economy, one of them certainly involving a local affection? If this be so, with what propriety can the same name be adjudged to both? Fever more or less, accompanies inflammation, and inflammation may supervene upon fever; but these conditions are not identical. If there is a demonstrated fact within the whole range of pathology, it is, that fever may begin and end its course, whether in life or death, without the occurrence of any organic lesion entitled to the appellation of inflammation. It is also demonstrated, that inflammation, sometimes of the brain or its membranes—at others, of the thoracic viscera, and occasionally of the abdominal, may variously occur in fever. There is no constancy in this respect; sometimes it is the one, sometimes it is the other—and occasionally all are affected. Seeing that these things are so, how can we say that fever and inflammation, whether of one organ exclusively, or of several, are identical? For my part, I cannot help arriving at the conclusion, that to view fever as an inflammation of the brain, of the intestinal mucous membrane, or of any other given organ—though all this may occur in fever, is to arrive at a conclusion which a correct interpretation of nature does not warrant. Individuals, perhaps, are entitled to give what names they may think proper to the phenomena of disease, provided they admit their existence, and then it is not of so much importance; but if the names given *à priori*, are the cause of leading us to form an erroneous estimate of the nature and amount of disease, as such a procedure is very apt to do, it becomes a matter of the utmost importance to designate diseases correctly. I think however, that we are entitled to foretell, that the progress and dissemination of a rational pathology, will in a great measure tend to prevent the more extensive dissemination of the views which, with the utmost deference to those who may differ in opinion from me, I have ventured to pronounce erroneous."—Pp. 110.

The author then proceeds to estimate the severity and probable danger of the disease from a consideration of the character of the whole phenomena, and the greater prevalence of individual symptoms, and gives a very useful sketch of the circumstances tending to establish the prognosis.

The last division of the essay is on the treatment and the means of preventing the diffusion of febrile epidemics. On the former the author enters at p. 121, and gives a clear and instructive statement of the remedies most likely to prove beneficial in the conducting the disease to a favourable termination; and he judiciously modifies the use of the means employed, according as the disease is simple, or complicated with symptoms of some local inflammation. The prophylactic means he proceeds to consider at p. 191, and gives a very instructive summary of the rules most likely to prevent the rise and propagation of this disease among communities, and bodies of human beings, whether in towns, ships, barracks, or private dwellings.

We have given as full an account of the nature of this treatise as our limits permit, and such a one as we trust will induce our readers to study the work itself. The materials are excellent; and the author gives proof that he has diligently studied the subject, both in books and in nature. We must be allowed to observe, however, and we do so with a sincere desire to improve the treatise, that Dr M'Cormac would facilitate greatly the labour of the reader, and convert it, as much as such a subject could be, into a pleasure, if he were to methodize more perfectly, his observations, and arrange them under appropriate heads, and if he would divide his discourse into the natural portions in which the subject is treated.

PART III.

MEDICAL INTELLIGENCE.

ANATOMY.

Newly discovered arrangement of the Arteries in the Erectile Tissue of the Penis. By Professor J. MULLER of Berlin. (*Archiv für Anatomie und Physiologie*, No. II. for 1835.) The second number of Müller's (late Meckel's) Archiv contains the account of an interesting discovery recently made by the editor, Professor J. Müller of Berlin, relating to the disposition of the small arteries of the penis, which tends to explain the structure of the erectile tissue of that organ,—a subject which, notwithstanding the investigations of Cuvier, Tiedemann, Moreschi, and Panizza, was still involved in much obscurity. These observations point out a fact entirely new in the structure of the arteries of the erectile texture, and promise to throw some light on the nature of the erectile condition of the blood-vessels.

Most of those who have investigated the structure of the erectile textures of the penis by injections have contented themselves with filling the veins of the organ, and thus, although the structure of the venous caverns of the *corpora cavernosa*, and the dilated veins of the *corpus spongiosum urethræ* was sufficiently well understood, yet very little was known respecting the mode of termination of the smaller arteries. It has been generally believed that the same small capillary arteries which nourish the penis carry the blood into capillary veins, that the blood passes from these into the dilated venous branches or sinuses, and that the state of erection depends on the retardation of the flow of blood in these venous spaces.

Professor Müller has, by a careful injection of the arteries of the penis, pointed out, besides the capillary branches which nourish the penis and transmit the blood into the capillary vessels and dilated veins, a number of very remarkable appendices connected with the smaller arteries, both in the *corpora cavernosa penis* and *corpus spongiosum urethræ*, which, from several circumstances, it is very probable, are the vessels more immediately concerned in maintaining an increased quantity of blood in the penis during erection.

The easiest way of rendering these two sets of arterial branches apparent is to inject the principal artery of the penis, before its subdivision, with size and vermilion of moderate consistence, and then, making a longitudinal section of one of the *corpora cavernosa*, to wash away any part of the injected mass which may have passed into the venous spaces. The ramifications of the nutrient arteries will then be easily seen upon the inner sides of the venous spaces, the arteries becoming smaller and smaller, until at last they pass into the minute capillary network, the branches of which cannot be seen with the naked eye. Besides these nutrient ramified arteries, there will also be seen upon a careful examination another set of arterial branches of a different size, form, and disposition, which are given off nearly at right angles from both the larger and smaller trunks of arteries. These arterial processes are about one-hundredth of an inch in diameter, and one-twelfth long, and are quite easily seen with the naked eye. They project into the cavities of the spongy substance, and terminate either bluntly or by dilated extremities, without undergoing any ramification. These short arterial processes are turned round at their extremities into a semicircle or more, and present a contorted appearance, which circumstance has suggested to Professor Müller the name of Helicine arteries, which he has applied to them.

The helicine arteries of the penis are more easily seen in man than in any other animal which Professor Müller has examined. He has found them in all the animals in which he has sought for them; they are to be seen at the posterior part only of the penis in the stallion, but in the dog exist throughout the whole organ.

In man, the helicine twigs of the penal arteries sometimes come off singly, and at other times they form tufts or bunches, consisting of from three to ten branches, and having in general a very short common stem. The swelling at the extremity, when it occurs, is gradual, and is greatest a little way from the end. The helicine branches given off from large arteries are not of a greater size than those coming from smaller ones, and even the smallest capillary arteries of the *profunda penis*, which can be seen with the help of a glass only, give off helicine twigs of a much greater size than themselves.

Each helicine branch projecting into a venous cavern is covered by a thin membrane, which Professor Müller regards as the inner coat of the dilated vein, and when there is a tuft of helicine twigs, the whole tuft is covered with one envelope of a gauze-like membrane. This covering is considerably thicker on the helicine arteries in the posterior part of the *corpus spongiosum urethræ* than in the *corpus cavernosum*, but it seems probable that this is in some measure connected with the state of repletion of the arteries, for when the injection has run very well it becomes difficult to distinguish the external covering.

Professor Müller states that he could not discover any apertures either in the sides or in the ends of the helicine arteries, but he seems to regard it as probable that minute apertures do exist, which may be of a nature to allow the passage of blood in some states and not in others.

The helicine arteries are not, as some might be inclined to suppose, loops of vessel which have been incompletely filled, and which, after making a coil, pass into venous spaces, as E. H. Weber discovered to be the case with the arteries of the maternal portion of the placenta; they are merely projecting branches from the arterial trunks containing blood.

The helicine arteries are more numerous towards the root than near the point of the penis. They exist in the *corpus spongiosum urethræ*, especially towards its bulb, but they are not so easily seen there as in the *corpora cavernosa*. They have not yet been observed in the glans. Their structure is nearly the same in all the animals in which they have been observed: those of the ape bear the nearest resemblance to those of man, and in most animals they are less obvious than in the human subject. In the horse and dog they give off small nutrient twigs from their sides, which render them more difficult to be seen in these animals than in man.

Professor Müller conceives these helicine or tendril-like arteries to have an intimate connection with the process of erection, and there is every probability that this is the case; but experiments and observations are still wanting to show in what manner these arterial branches are affected in the erected and non-erected condition of the texture in which they exist.

We recommend to the attention of our readers this discovery of Professor Müller's, whose researches have already done a great deal for the advancement of physiological anatomy. The memoir is accompanied with a well executed engraving, containing numerous representations of the helicine arteries, which we regret that time has not enabled us to copy.

THERAPEUTICS.

On the Febrifuge Properties of the Gum Resin of the Olive Tree. By Dr Vincent Giadorou, of Sebenico. (*Annali Universali di Medecina, June* 1831.)—The difficulty and uncertainty in some situations of procuring either bark or sulphate of quinine, and the expence of these articles, has always made it an object to discover in febriferous situations, among the indigenous products of the country, some remedy which might answer as a substitute. The prevalence of agues in the town of Sebenico and its vicinity, especially among the more indigent classes of the population, led Dr Giadorou to inquire whether any of the indigenous plants of the country might possess such physiological and therapeutic properties as might admit of its being used as a substitute for cinchona. The tree which attracted attention as being the most abundant was the olive tree, the leaves of which had been reported by some respectable physicians to possess febrifuge properties. Dr Giadorou, accordingly, administered a decoction of the olive tree leaves to different persons labouring under ague, and the success he represents to have exceeded his expectations; and afterwards it was given in so many cases with favourable issue, as to leave no doubt of the febrifuge properties of the olive tree leaves. An epidemic invasion of ague, which in Sebenico is endemic, in the autumn of 1830, gave still more ample opportunities of proving the efficacy of this substance.

The mode of exhibition by Dr Giadorou was the following. The habitual dose to each adult was three times daily half a pound of a decoction of two ounces of olive tree leaves cut or minced. In almost all the cases the fever disappeared on the second, the third, or the fifth day from the commencement of administration. In cases in which gastric symptoms betrayed their existence, the author employed merely sea water. In cases in which it was impracticable, from the misery and indigence of the inhabitants, to prepare the decoction, Dr Giadorou exhibited the leaves in powder, in doses of from one to three drachms, according to the age of the patient, combined with a sufficient allowance of water or wine, and taken every two hours during the apyrectic space. He observed that the leaves of the olive tree administered in this manner acted more promptly and energetically; since, in several adults, three ounces were sufficient to arrest the progress of the disease.

Of seventy-four cases treated in one of the aguish villages from the 12th September 1830, by the decoction or the powder of the olive tree leaves, on the 3d October, *i. e.* twenty-one days after, seventeen persons only were still affected with symptoms, and of this number several were new cases; and twelve days after, there were only four cases ill.

Dr Giadorou adds, that, as he was convinced that the active principle of this vegetable ought to be found in the dried juice which naturally exudes from the bark, he administered the same year the gum-resin of the olive tree to several patients labouring under ague. The results of this trial also verified the anticipations of Dr Giadorou, since they showed that the gum-resin possesses still more energetic febrifuge properties than either the decoction or the powder of the leaves. An advantage peculiar to the gum-resin, according to the representations of Dr Giadorou, is evident in one of its physiological effects; viz. that of producing, during treatment, alvine evacuations more or less frequent, and hence its admissibility in a loaded state of the tongue; and in this respect he thinks the mode of operation of the olive tree gum-resin approaches that of rhubarb,—or, in other words, it possesses a property both tonic and purgative, which is to be ascribed, he thinks, not only to the bitter principle, (*Olivile,*) but to the benzoic acid which it also contains.

The gum-resin operates without inducing weakness, and it rather augments appetite; and its therapeutic effects are said to be to remove the febrile paroxysm more rapidly and effectually than cinchona or the sulphate of quinine does. In two cases in which relapses ensued twelve or fifteen days after treatment by cinchona and sulphate of quinine, a relapse ensued only a month after treatment by the use of the olive tree gum; and upon the resumption of the remedy, at the second dose, the fever disappeared completely without return.

The dose in which the gum resin was prescribed was one ounce and a-half, Austrian weight, that is, about one ounce and five drachms English, divided into six parts, one of which was taken in water every two hours, in such a manner that the whole quantity was taken three hours before the period of the expected return of the accession. In cases in which the intense bitterness of the principle was an objection, a small quantity of liquorice powder was added, which has the double advantage of facilitating the reduction of the gum to powder, and disguising the disagreeable taste.

The febrifuge properties of the gum resin are illustrated by the detail of ten cases, in which it effected complete recoveries.

On the employment of Sulphate of Copper as a remedy in Croup. By Dr Droste of Osnabruck. (*Heidelberg Clinical Annals*, 10*th Volume*, 2*d*, 1834.)—The praises lavished on the use of sulphate of copper against croup by Dr Hoffmann of Darmstadt, in 1821, in Hufeland's Journal, and reiterated in 1826 in the Journal of Harless, determined Dr Droste to subject it to trial; and this he has done for the space of seven years, apparently with great success; since during that time he has not lost a single patient,—a very extraordinary circumstance, even allowing that several of the cases were not severe. He states, that he has himself been surprised at the celerity with which the alarming symptoms were, as it were, extinguished after the administration of this salt. He has not recognized in calomel the efficacy ascribed to it by several distinguished practitioners. The first objection to its employment is that it acts too slowly; the second, its action upon the lymphatic system, when administered in large doses, or repeatedly, or for a long time. In the latter case he believes that it renders the fibrine of the blood less plastic and more watery, and the children become cachectic and dropsical.

As croup owes its existence to an inflammatory irritation of the mucous membrane of the air-passages, which induces a profuse secretion of lymph, or mucus susceptible of being converted into false membrane, moulded on the laryngeal and tracheal canal, the first indication is to rescue the patient from the imminent danger of suffocation by clearing the air-passages from the mucus with which they are filled, and the false membrane, by which they are lined. This is not effected by means of calomel, unless at the same time be employed its ordinary adjuvants, as blood-lettings, emetics, rubefacients, vesications, and revellents; while the sulphate of copper in a large majority of cases is alone successful in effecting this object.

A full dose of the salt, that is, one, two, or three grains, produces immediately, or at the end of some minutes, violent vomiting, which forcibly detaches the false membranes; and, however insufficient the dose may have been, it is unnecessary to administer a second. Other emetics, on the contrary, when given in a large dose, often occasion *hyperemesis*, their action continues long, they induce diarrhœal symptoms, always useless, often dangerous, and in no case do they act according to the representation of Dr Droste, so efficiently as the sulphate of copper. In a small dose, blue vitriol maintains a slight uneasiness, which terminates in profuse transpiration, or vomiting, which finally detaches the rest of the plastic exudation, which is heard wavering in the windpipe and *bronchi*. The voice then becomes clear, and respiration is more easy.

Weinhold admits that copper in a small dose, that is, in a dose too weak to excite vomiting, exercises no deleterious influence on the organism, but that it becomes dangerous when vomiting follows its administration. The contrary proposition appears to be the true one; for, in a small dose, it is absorbed, and gradually induces danger, especially if the organism be not accustomed to resist the injurious influence of external agents, unless, it is added, the remedy be administered in the homoeopathic dose, in which case, though it does no mischief, yet it effects no benefit, because in the infant *belief is inert.*

M. Droste does not allow, with Dr Hoffmann, that the employment of the sulphate of copper supersedes the use of other remedies, as local bleeding by means of leeches, if the symptoms demand such remedies. In point of fact, in his cases he orders not only local bleeding, but the application of blisters. He employs also powder of *digitalis*, or tartrate of antimony, as antiphlogistics, subcarbonate of ammonia as an expectorant, purgative glysters, and the *potio Riverii* in some cases, and *spiritus Mindereri* in others.

The method of treatment consists in giving at the commencement one grain of blue vitriol to an infant under two years, two grains to a child of from two years to four, and three grains to a child between that period and eleven; a dose which is followed by almost immediate vomiting. If by this method the symptoms are not entirely subdued, sulphate of copper is then given in doses of one-fourth or one-half of a grain every two hours, according to its effects and the abatement of the disease. Of these small and subsequent doses, it appears from the cases to be rarely requisite to give more than three or four.

Such are the reported effects of this remedy and method of treatment, as represented by Dr Droste. It is much to be desired that the author had been a little more detailed and particular as to the exact characters of the cases, as to whether he had really never failed in curing croup by this remedy, as to the subsequent course of the cases, and whether any effects were left by the action of the blue vitriol upon the stomach. We must say, that a detail of the effects of a remedy in which there had been some unsuccessful cases would have been more calculated to produce a favourable impression than one in which there are no instances of failure. Cases of invariable success inevitably lead to the conclusion, that many of them must have been very slight, and that the remedial agent employed had little to do with the result. They prove, in fact, too much.

On the Treatment of Tic Douloureux. [*Cases of Tic Douloureux and other Forms of Neuralgia.* By JOHN SCOTT, Surgeon to the London Hospital. London, 1834.]—In this excellent little tract, the constitutional causes of the disease are arranged under five heads. 1*st*, plethoric state of the system; 2*d*, an asthenic state; 3*d*, a gouty or rheumatic diathesis; 4*th*, a disordered condition of the digestive organs; and 5*th*, the impression of *malaria* on the system. Mr Scott, therefore, repudiates the idea of there being such a thing as a specific for the disease, and in the early stages trusts to removing the constitutional cause. Should the disease, however, have lasted for some time, local treatment is also necessary, which, however, is by no means to be employed indiscriminately in every case. The plan which he adopted "was to keep constantly applied to the part, on a piece of flannel, an ointment composed of one drachm of tartarized antimony and an ounce of mercurial ointment, renewing it as frequently as it could be borne, the object being to produce such a degree of irritation on the skin as would insure this mercurial influence on the part. This method was attended with very considerable success." It subsequently occurred to him that the use of an iodide of mercury would be more effectual since the skin would be abraded more speedily. Accordingly, he applied the biniodide of mercury, iodide of mercury, or simple mercurial ointment, according to the state of the skin, "the object being to produce such an effect upon the part as would control the disease, and to keep up the impression of the remedy to such an extent, and for such a length of time as would revive the morbid condition of the nerve." In illustration of this, several decided cases are detailed. The sum of Mr Scott's doctrine is, that when the disease depends upon constitutional causes, the removal of these early will cure the disease; that when the disease has existed for some time, local treatment combined with constitutional, will become necessary; and that when the cause is local, topical applications, such as those mentioned above, will have the desired effect.

MISCELLANEOUS AND MEDICAL EDUCATION.

Regulations to be observed by Students intending to qualify themselves to practise as Apothecaries in England and Wales.—THE Court of Examiners of the Society of Apothecaries of London have witnessed with great satisfaction the benefits derived from the course of study enjoined by them, in the increased acquirements of the candidates who present themselves for examination; and being assured that the time is arrived when it behoves them to complete the scheme which they have long had in view, and to which they have advanced by successive and cautious steps, they now publish an extended course of study, which, although it may perhaps require hereafter some modification in the details, may be considered, both in extent and duration, as final.

In prolonging the period of study, the court feel confident that they are consulting the interests of the public, and that they are also acting in accordance with the wishes of the profession generally, and more especially of the enlightened body of gentlemen engaged in teaching medicine and the various sciences connected therewith, who have, for some time past, expressed their sense of the great advantages which would result from a systematic arrangement of the sessions at the medical schools, and of the particular subjects of study appropriate for the winter and summer seasons. The court will be solicitous to lessen whatever inconvenience may, in the first instance, be attendant upon this important change; and they will be ready to pay attention to the cases of such students as may be prevented by peculiar circumstances from commencing their attendance at the schools in the early part of October, the period of the year at which it is most especially desirable that such attendance should, in future, commence.

The liberality of the physicians of the London hospitals, in promptly acceding to the wishes of the court, that students might have afforded to them a more extended opportunity of studying practical medicine without any augmentation of expense, has enabled the court to require an attendance of the students for eighteen months at an hospital instead of twelve; and to this boon the physicians would add a yet more essential service by inducing the governors of the hospitals with which they are connected, to re-organize their respective out-patient establishments, and afford to students an opportunity of studying large and important classes of disease, which are very rarely admitted within the wards of an hospital.*

The great advantages which students have derived from a regular course of periodic examinations, in the schools in which this system has been adopted, associated with a systematic and combined course of reading and oral instruction, induce the court again to press this subject especially upon the attention of teachers. The use of a class-book also, for each particular branch of study, would better enable the student to reduce into order the numerous facts placed before him, and to refer again and again to such points as require a sustained exercise of the powers of reasoning, for their full and clear comprehension.

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* It appears by the Parliamentary Tables, that *more* than one-half of the deaths which annually take place, are those of children under five, and of the aged, above seventy years of age. The diseases of these two classes, and those of women in the pregnant and puerperal state, cannot be studied at hospitals, as they are now constituted

The Legislature having made an apprenticeship of five years imperative upon all students, and having permitted them to present themselves for examination at the age of twenty-one, obviously intended that the greater part of their medical education should be included within that period; and the court have great pleasure in stating, that in very many instances students have actually completed their course of study, and have been admitted to an examination, within a few weeks after the termination of their apprenticeship. It is, however, to be regretted that this advantage has frequently been lost sight of, and that a great proportion of this valuable time, and not unfrequently the whole term of it, has been passed exclusively in practical pharmacy. The court are desirous of impressing upon parents the necessity of preventing this waste of time, by making such arrangements with practitioners with whom they place their sons, as may enable the young men to commence their attendance upon lectures in the course of the third year of their apprenticeship.

The court renew their recommendation that the apprenticeship should not begin until the youth has attained his seventeenth year, and that he should previously have received a sound classical education, and have been instructed in the elements of mathematics and natural philosophy, and have acquired a knowledge of the French, and, if possible, the German languages.

The period of apprenticeship is by no means to be considered as of small importance; during that time it is incumbent upon the master to take care that his apprentice keeps up and extends, by a regular course of reading, both his classical and general knowledge: it is also his duty to ascertain, by occasional examinations, that his pupil is acquiring the elements of professional knowledge; and that he becomes acquainted with the nomenclature of the profession, the manipulations of pharmacy, and the elements of osteology; whilst opportunities should be afforded him of watching the progress of disease, and of noticing the effects of remedies.

The court have reason to believe, that students would in many instances gladly avail themselves of an opportunity of passing their Latin examination upon the commencement of their studies at the medical schools; the court have, therefore, arranged a plan for that purpose, which may be adopted at the option of the student, at the time of registering his first attendance upon lectures. After this preliminary examination in Latin has been satisfactorily passed, the student will not be subjected to any farther examination in Latin medical classics.

The Court of Examiners have only to add, that they have framed the following course of study with especial reference to the surgical as well as medical duties which devolve upon the general practitioner when engaged in practice, and with the knowledge that students, with few exceptions, pass an examination in surgery at the Royal College of Surgeons, as well as one in medicine at the Hall: the court have, therefore, taken care to afford every facility for a strict conformity with the regulations of the College, as well as with those which they have themselves enjoined. The court exhort students not to rest satisfied with a mere formal compliance with the injunctions of authority, but to be actuated by still higher motives, and to find in these an incentive to a zealous and generous devotion of their time, their labour, and their best faculties, to the acquisition of an accurate and comprehensive knowledge of the principles of the healing art.

Every candidate for a certificate to practise as an apothecary, will be required to produce testimonials—

* Of having served an apprenticeship of not less than five years to an apothecary;

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* No gentleman practising as an apothecary in England or Wales can give his

*Of having attained the full age of twenty-one years.

†And of good mortal conduct.

Students whose attendance on lectures shall commence on or after the 1st of October 1835, will also be required to produce proof of having attended, during three Winter and two Summer sessions, lectures in the following order, and medical practice from the commencement of the second, to the termination of the third Winter session.

The Winter medical session is to be understood as commencing on the 1st of October, and terminating in the middle of April, with a recess of fourteen days at Christmas: the Summer session as commencing on the 1st of May, and ending on the 31st of July.

First Winter Session.—Chemistry.
Anatomy and physiology.
Anatomical demonstrations.
Materia medica and therapeutics.

First Summer Session.—Botany; and such other branches of study as may improve the student's general education.

Second Winter Session.—Anatomy and physiology.
Anatomical demonstrations.
Dissections.
Principles and practice of medicine.
Medical practice of an hospital.

Second Summer Session.—Botany, if not attended during the first Summer session.
Midwifery and diseases of women and children.
Forensic medicine.
Medical practice of an hospital.

Third Winter Session.—Dissections.
Principles and practice of medicine.
Midwifery, with attendance on cases.
Medical practice of an hospital or dispensary.

The student is required to attend the medical practice of a recognized hospital, from the commencement of the second Winter to the termination of the second Summer session, and from that time to the end of the third Winter session, at an hospital, or recognized dispensary.

The sessional course of instruction in each respective subject of study, is to consist of not less than the following number of lectures, viz:—

One hundred on chemistry.
One hundred on materia medica and therapeutics.
One hundred on the principles and practice of medicine.
Sixty on midwifery, and the diseases of women and children.
Fifty on forensic medicine.
Fifty on botany.

The number of Lectures on anatomy and physiology, and of anatomical demonstrations, must be in conformity with the regulations of the Royal College of Surgeons of London, on these subjects.

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apprentice a legal title to examination, unless he is himself legally qualified to practise as an apothecary, either by having been in practice prior to or on the 1st of August 1815, or by having received a certificate of his qualification from the Court of Examiners. An apprenticeship for not less than five years to surgeons practising as apothecaries in Scotland and Ireland, gives to the apprentice a title to be admitted to examination.

* As evidence of age, a copy of the baptismal register will be required in every case where it can possibly be procured.

† A testimonial of moral character from the gentleman to whom the candidate has been an apprentice, will always be more satisfactory than from any other person.

The Lectures required in each course respectively must be given on separate days.

Students, when they present themselves for examination, must bring testimonials of having received instruction in practical chemistry during their attendance upon the lectures on chemistry, materia medica, or forensic medicine; and also of having attended a full course of clinical lectures, and such instruction in morbid anatomy as may be afforded them during their attendance at an hospital.

Every student will be required to produce proof of having dissected the whole of the body once at least.

Students whose attendance on lectures commenced prior to the 1st of February 1828, will be admitted to examination in conformity with the regulations published in September 1826—viz. after an attendance on

One course of lectures on chemistry.
One course of lectures on materia medica.
Two courses of lectures on anatomy and physiology.
Two courses of lectures on the theory and practice of medicine.
And six months' physician's practice at an hospital, or nine months' at a dispensary.

Those who began to attend lectures subsequently to the 1st of February 1828, and previously to the 1st of October of the same year, in conformity with the regulations of September 1827—viz. after an attendance on

One course of lectures on chemistry.
One course of lectures on materia medica and botany.
Two courses of lectures on anatomy and physiology.
Two courses of lectures on the theory and practice of medicine; these last having been attended subsequently to the lectures on chemistry and materia medica, and to one course at least of anatomy.
And six months' at least, physician's practice at an hospital, or nine months' at a dispensary; such attendance having commenced subsequently to the termination of the first course of lectures on the principles and practice of medicine.

Those whose attendance on lectures commenced in October 1828, must have complied with the regulations of September 1828—viz. by having attended

Two courses of lectures on chemistry.
Two courses of lectures on materia medica and botany.
Two courses of lectures on anatomy and physiology.
Two courses of anatomical demonstrations.
Two courses of lectures on the theory and practice of medicine; these last having been attended subsequently to one course of lectures on chemistry, materia medica, and anatomy.
And six months, at least, the physician's practice at an hospital (containing not less than sixty beds), or nine months at a dispensary; such attendance to have commenced subsequently to the termination of the first course of lectures on the principles and practice of medicine.

All students who began to attend lectures in January 1829, are required to have attended the physician's practice at an hospital for nine months, or at a dispensary for twelve months, and also to have attended

Two courses of lectures on midwifery, and the diseases of women and children.

Students whose attendance on lectures commenced on or after January 1831, must adduce proof of having devoted at least two years to an attendance on lectures and hospital practice; and of having attended the following course of lectures:

Chemistry: Two courses—each course consisting of not less than forty-five lectures.

Materia medica and therapeutics: Two courses—each course consisting of not less than forty-five lectures.

Anatomy and physiology: Two courses.

Anatomical demonstrations: Two courses.

Of the same extent as required by the Royal College of Surgeons of London.

Principles and practice of medicine: Two courses—each course consisting of not less than forty-five lectures,—to be attended subsequently to the termination of the first course of lectures on chemistry, materia medica, and anatomy and physiology.

Botany: One course—consisting of not less than thirty lectures,—to be attended between the 1st of April and 31st of October.

Midwifery, and the diseases of women and children: Two courses.

Forensic medicine : One course—To be attended during the second year.

Students are likewise earnestly recommended to avail themselves of instruction in morbid anatomy.

The candidate must also have attended, for twelve months at least, the physician's practice at an hospital containing not less than sixty beds, and where a course of clinical lectures is given ; or for fifteen months at an hospital wherein clinical lectures are not given ; or for fifteen months at a dispensary connected with some medical school recognized by the Court. No part of this attendance can be entered upon until the termination of one entire year from the commencement of attendance on lectures, nor until one course of lectures at least on chemistry, materia medica, anatomy, and the practice of medicine, have been attended in the order prescribed by the regulations.

The testimonials of attendance on lectures, and medical practice, must be given on a printed form, with which students will be supplied on application, at the under-mentioned places :

In London, at the beadle's office at this Hall.

In Edinburgh, at Messrs Maclachlan and Stewart's, booksellers.

In Dublin, at Messrs Hodges and Smith's, booksellers.

In the provincial towns, where there are medical schools, from the gentlemen who keep the registers of the schools.

No other form of testimonial will be received ; and no attendance on lectures will qualify a candidate for examination, unless the lecturer is recognized by the Court.

The names of the lecturers recognized by the Court may be seen on application to the several gentlemen acting as registrars in the provincial schools, and at the beadle's office at the Hall.

The teachers in London, Dublin, Edinburgh, Glasgow, and Aberdeeen recognized by the constituted medical authorities in those places respectively, are recognized by the court ; and certificates given by the medical professors in the continental universities are also recognized and received by the Court.

Gentlemen wishing to be recognized as lecturers, are referred to the following resolutions of the Court, passed on the 18th of November 1830, viz.

Resolved,—That no member of the Court of Examiners shall be recognized as a lecturer on any branch of medical science.

That the Court will not recognize any teacher who may give lectures on more than two branches of medical science.

That the Court will not recognize a teacher until he has given a public course of lectures on the subject he purposes to teach ; but if, after such preliminary courses of lectures, the teacher should be recognized, the student's certificate of attendance on that course will be received.

That the Court will not recognize a teacher until he has produced very satisfactory testimonials of his attainments in the science he purposes to teach, and also of his ability as a teacher thereof, from persons of acknowledged talents and of distinguished acquirements in the particular branch of science in question.

That satisfactory assurance shall also be given that the teacher is in possession of the means requisite for the full illustration of his lectures, viz. that he has, if lecturing—

On chemistry, a laboratory and competent apparatus:

On materia medica, a museum sufficiently extensive:

On anatomy and physiology, a museum sufficiently well furnished with preparations, and the means of procuring recent subjects for demonstration:

On botany, a hortus siccus, plates or drawings, and the means of procuring fresh specimens:

On midwifery, a museum, and such an appointment in a public midwifery institution as may enable him to give his pupils practical instructions.

That the lecturer on the principles and practice of medicine must be, if he lectures in London, or within seven miles thereof, a Fellow, Candidate, or Licentiate of the Royal College of Physicians of London; and if he lectures beyond seven miles from London, and should not be thus qualified he must be a graduated Doctor of Medicine of a British university of four years' standing (unless previously to his graduation he had been for four years a Licentiate of this Court.)

That the lecturer on materia medica and therapeutics must be a Fellow, Candidate, or Licentiate of the Royal College of Physicians of London; a graduated Doctor of Medicine of a British University of four years' standing (unless previously to his graduation he had been for the same length of time a Licentiate of this Court); or he must be a Licentiate of this Court of four years' standing.

That the lecturer on anatomy and physiology must either be recognized by the Royal College of Surgeons of London, or must be a member of that College of four years' standing.

That the Demonstrator of Anatomy must either be recognised by the Royal College of Surgeons of London, or must be a member of that College.

Hospitals as Schools of Practical Medicine.—No hospital (not already recognized) will in future be placed upon the list of recognised schools of practical medicine, unless it is situated in London, or in one of the provincial cities or towns in which schools of medicine are established and the physicians attached to it give a full course of instruction in clinical medicide and morbid anatomy.

The hospital must contain one hundred patients at least, and must be under the care of at least two physicians, each of whom must be a Fellow, Candidate, or Licentiate of the Royal College of Physicians of London, if the hospital be situated in London; and if in a provincial town, the physicians, if not members of the Royal College of Physicians, must be graduated Doctors of Medicine of a British university.

The apothecary of the hospital must be legally qualified, either by having been in practice prior to or on the 1st of August 1815, or by having received a certificate of qualification from the Court of Examiners.

Dispensaries as Schools of Practical Medicine.—The court will recognize, as schools of practical medicine, such dispensaries as shall give satisfactory evidence on the following points, viz.

That the Dispensary is situated in some city or town in which there is a medical school recognized by the Court:

That the rules for the government of the Dispensary permit the attendance of students, and that the physicians afford them instruction and opportunities of acquiring practical knowledge in medicine:

That the dispensary (if within the limit of the jurisdiction of the Royal College of Physicians of London) is under the medical care of at least two physicians, each of whom is a Fellow, Candidate, or Licentiate of the Royal College; and if beyond these limits, that it is under the care of at least two physicians, who, if not so qualified, are graduated doctors of medicine of a British University, of four years' standing:

And that the apothecary of the Dispensary is *legally* qualified, either by having been in practice prior to or on the 1st of August 1815, or by having received a certificate of qualification from the Court of Examiners.

Registration—A book is kept at the hall of the Society for the registration, at stated times, of the names of students, and of the lectures, hospitals, or dispensaries, they attend.

All students, in London, are required to appear personally, and to register the several classes for which they have taken tickets; and those only will be considered to have complied with the regulations of the Court whose names and classes in the register correspond with the testimonials of the teachers.

The book will be open for the registration of tickets authorising the attendance of students on lectures and medical practice during the *first twenty-one days* of October, and *the first fourteen days of May*, from nine o'clock until two; and for the registration of certificates of having *duly attended* such lectures or medical practice during the *last fourteen days* of April and of July.

The court also require students at the provincial medical schools to register their names in their own handwriting, in the order above stated, with the registrar of each respective school; and the registrars are requested to furnish the Court of Examiners with a copy of each registration *immediately* after its termination, as those students only will be admitted to examination whose registrations have been *duly* communicated to the Court.

Names of Gentlemen having the care of the Registers.—Bath.—R. T. Gower, Esq. Lecturer on Anatomy; John Spender, Esq. ditto.

Birmingham.—W. Sands Cox, Esq. Lecturer on Anatomy.

Bristol.—Dr. Wallis, Lecturer on Anatomy; Henry Clark, Esq. ditto.

Hull.—Edward Wallis, Esq. Lecturer on Anatomy; Robert Craven, Esq. ditto.

Leeds.—Thomas Pridgen Teale, Esq. Lecturer on Anatomy.

Liverpool.—William Gill, Esq. Lecturer on Anatomy.

Manchester.—Joseph Jordan, Esq. Lecturer on Anatomy; Thomas Turner, Esq. ditto; Thomas Fawdington, Esq. ditto.

Sheffield.—Wilson Overend, Esq. Lecturer on Anatomy; W. Jackson, Esq. ditto.

Each student, at his first registration, will receive the printed form on which he is to obtain the printed certificates of his teachers.

Examination.—Every person offering himself for examination must give notice in writing to the clerk of the society, on or before the Monday previously to the day of examination, and must also, at the same time, deposit all the required testimonials at the office of the beadle; where attendance is given every day (except Sunday), from nine until two o'clock.

The examination of the candidate for a certificate of qualification to practise as an apothecary, will be as follows:—

In translating parts of Celsus de Medicinâ, and Gregory's Conspectus Medicinæ Theoreticæ*

In physicians' prescriptions, and the Pharmacopœia Londinensis:

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* Students may undergo their Latin examination in these works at the commencement of their studies in London, by giving notice to the beadle, at their first registration, of their wish to do so. And students who are already registered will be admitted to this examination on making an application to the Court.

In chemistry:
In materia medica and therapeutics:
In botany:
In anatomy and physiology:
In the principles and practice of medicine.[*]

The examination of a candidate for a certificate of qualification to act as an assistant to an apothecary, in compounding and dispensing medicines will be as follows:—

In translating physicians' prescriptions, and parts of the Pharmacopœia Londinensis:
In pharmacy and materia medica.

By the 22d section of the act of Parliament, no rejected candidate for a certificate to practise as an apothecary, can be re-examined until the expiration of six months from his former examination; and no rejected candidate as an assistant until the expiration of three months.

The court meet in the Hall every Thursday, where candidates are required to attend at a quarter before four o'clock.

The Act directs the following sums to be paid for certificates:

For London, and within ten miles thereof, ten guineas.

For all other parts of England and Wales, six guineas.

Persons having paid the latter sum become entitled to practise in London, and within ten miles thereof, by paying four guineas in addition.

For an assistant's certificate, two guineas.

By order of the Court, JOHN WATSON, *Sec.*

Apothecaries' Hall, April 23, 1835.

For information relative to these regulations, students are referred to Mr Watson, who may be seen at his residence, 43, Berners Street, between the hours of nine and ten o'clock every morning (Sunday excepted;) and for information on all other subjects connected with the "Act for better regulating the Practice of Apothecaries," application is to be made to Mr R. B. Upton, Clerk of the Society, who attends at the Hall every day (Sunday excepted) from one to three o'Clock.

It is expressly ordered by the Court of Examiners, that no gratuity be received by any officer of the court.

Military Surgery Class, University of Edinburgh, 1834-35.—On Thursday the 16th day of April, at the last meeting of the Class of Military Surgery in the University of this city, in the presence of a considerable number of the Professors of the Medical Faculty, and most of the Medical Officers of the Army and Navy and East India Company's Service resident in Edinburgh, Sir George Ballingall, after concluding the lecture, proceeded to announce the names of the gentlemen who had obtained prizes.

It had been announced at the commencement of the session, that the pupil who should most distinguish himself by regular attendance, diligence, and correct answers at the examinations, together with an essay *On the Means of Preserving the Health, and promoting the efficiency, of Soldiers and Seamen, especially in Warm Climates*, should be recommended by the Professor to the Director-General for an appointment in the medical department of the army. It was at the same time announced that a case of surgical instruments should be awarded to the author of the best essay on penetrating Wounds of the Chest.

By nearly the unanimous votes of the class, after a competition conducted in presence of the Principal of the University, and numerous professional gentlemen, the individual selected as most distinguished by a knowledge of the subjects of military medicine and surgery was Mr Robert Lawson from Perthshire, in which decision the Professor concurred, and Mr Lawson was accordingly recommended to the Director-General. We understand that he has since received this appointment so justly due to his merits.

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[*] This branch of the examination embraces an inquiry into the diseases of pregnant and puerperal women; and also into the diseases of children.

Two candidates appeared for the Second Prize; and as the Essays were considered of nearly equal merit, the Professor deemed it expedient to divide the prize, or rather, to give each of the candidates a prize; one a case of amputating instruments, and the other a case of trepanning instruments. Upon opening the sealed letters which accompanied the essays, in the presence of the auditory, it was found that the candidates were Mr Alexander Campbell from Persia, and Mr Robert Lawson, the gentleman whose merits were so highly distinguished by the suffrages of his fellow-students.

In announcing these proceedings, we think it our duty to direct the attention of the profession to the judicious and praiseworthy conduct of the Director-General, and to the beneficial effects both upon the public service and upon the acquisition of correct and useful professional knowledge, which the occasional repetition of this mode of rewarding merit is calculated to produce. When students are made to perceive that regularity and attention in study, diligence in the acquisition of knowledge, and promptitude in adducing proofs of its possession, are made the tests of their fitness for public situations, and that attention is given to these qualifications, to the exclusion of influence or the solicitations of friends, they will speedily see the necessity of trusting to merit and professional attainments alone.

So convinced are we of the beneficial effects of this mode of exciting emulation, that we may, with deference to the authorities respectively at the head of these departments, express the opinion that a similar plan might be most advantageously adopted, not only in the distribution of appointments in the army, but in the navy and in the Honourable the East India Company's Service. Such a course would have the happiest effects in securing to these different departments the services of the most intelligent, accomplished, and diligent medical officers.

We are tempted particularly to advert to the necessity of attendance on courses of Military Surgery, not only to those destined for the medical department of the army and navy, but also to those who are to be employed in the service of the Honourable the East India Company. The importance of an intimate acquaintance with the best means of preserving the health of soldiers, is nowhere more clearly evinced than in India; and it would only show a proper degree of interest in the qualification of their medical officers, if the Honourable the Directors would recommend, if not enjoin, attendance on these lectures, or at least signify their determination, in the filling up of vacant appointments, to prefer those who, being equal in other branches of medical education, had devoted attention to this.

The justice of this opinion is corroborated by the fact, that we find it to be a very general sentiment among the medical officers of that service resident here, that attendance upon this class would be of great utility to them in the exercise of their duties.

It may, indeed, become a question, whether it would not be proper to institute lectures on military medicine and surgery in each of the other two great medical schools, London and Dublin.

The Prize Essay for the ensuing year is the following.—

On the Classification of the Feigned and Fictitious diseases of Soldiers and Seamen, the means used to simulate or produce them, and the best means of detecting impostors.

(Prize, a case of amputating instruments.)

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PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Select Cases and Communications, forming part of the* TRANSACTIONS OF THE MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH. Communicated by the COUNCIL.

1.—*Case of Softening and Solution of the Coats of the Stomach and Duodenum of an Infant.* By DR BEILBY, F. R. C. P.

ON the 11th of October last at 4. P. M. I saw the infant son of Mr M. along with Dr Davidson, who had been called in only a few hours before. The child was about four months old, very much emaciated, its skin of a deadly paleness, the features collapsed, the eyes sunk and dull, the anterior fontanelle large and remarkably depressed, and the pulse was feeble and fluttering, —its whole appearance indicating the near approach of death. I learned that, about a month before, the infant had been attacked with diarrhœa accompanied with fever, and from this time some of the relations thought it continued to fall off, and urged the mother, who had not been in good health, to discontinue the nursing. For twenty-four hours preceding our visit it had been suffering under a very urgent diarrhœa, and since early in the morning there had been constant vomiting, nothing having remained on the stomach but two teaspoonsful of sack whey.

In this state it is needless to detail the treatment prescribed. The child died about midnight.

The body was examined in thirty-three hours after.

The abdomen being laid open the general appearance of the *viscera* was sound and natural. The stomach and intestines seemed to be quite empty.

In raising the stomach to put ligatures round its orifices I pressed my finger through it at its larger extremity, where the coats were so soft as to give scarcely any resistance. When slit open the stomach was found to be not only without any solid or fluid contents but remarkably destitute of mucus. I gently agitated it in water, which separated a very small quantity of mucus with some shreds, which seemed to be the remains of the mucous membrane detached from the splenic extremity, where the part around the laceration presented a bluish-white semitransparent appearance. This extended about an inch and a-half from the laceration towards the *cardia*, and three-fourths of an inch towards the greater curvature. Over this extent a softening of the stomach had taken place, greater in degree, and penetrating deeper, towards the lacerated portion, and more especially anterior to it, where the slightest effort was sufficient to tear it. The whitish-colour was bounded in this direction by a patch of red, and a slight thickening of the coats.

In the *duodenum* there was a portion of the mucous membrane of a pulpy softness.

2.—*Case of Erosion of the inner coats of the Stomach in a boy of* 14 *years of age.* By Mr Sidey, Surgeon. (Communicated by Dr Gairdner.)

A boy, named George Lamb, aged 14 years, was attacked on the 28th of August with violent vomiting, attended with obstinate costiveness, and occasional bending back of the head on the neck. The pulse was very small, and remarkably quick. The superior and inferior extremities were extremely cold. Slight pain was felt in the right iliac region, not increased by pressure. There was no tension of the abdomen, thirst was constant, and as soon as any liquid was swallowed it was vomited again. There was great prostration of strength. He was occasionally perfectly correct, at other times wandering.

I ordered for him some calomel and rhubarb, in small doses, with assafœtida glysters, and the warm bath. After coming out of the bath, to be rubbed with some turpentine, and the extremities to be wrapped in flannels. On the 29th the bowels had been moved freely, but the vomiting and the coldness of the extremities with great restlessness continued. On the 30th, when he was more collected, a sinapism was laid along the spine and across the stomach; the head was shaved, and he got some blue-pill with the extract of henbane. On the 31st the vomiting returned, the bowels had been moved freely; he was more collected, and walked through the room. On the 1st September he was very restless, vomited violently—medicine and every thing else being rejected. Complained of pain at his heart. Bowels moved; no tension of abdomen; no sleep since the commencement of his illness. 2d, Appeared relieved—sat up in bed amusing himself with the other children, but in the evening was very restless, and next morning rapidly sunk.

Leave being obtained to open the body, it was done early next morning by Dr W. Thomson and myself. On the abdomen being opened the viscera appeared to be throughout perfectly sound, containing very little feces, and no vestige of vascular action; no adhesion or other signs of inflammation were discoverable. But on coming to the stomach there appeared on its upper surface and left extremity a portion of the peritoneal coat, about three or four inches in circumference, of a bluish colour, and elevated into a greater convexity than the rest of it. The stomach was distended with a greenish glairy fluid; its villous coat all around the situation of the prominent portion was softened and semitransparent; no signs of inflammation were discoverable in any part of the organ.

On the chest being opened the lungs were found to adhere strongly throughout the whole cavity; the *pericardium* also adhered to the heart.

Previously to this illness the boy enjoyed the best health. Never had measles, nor hooping-cough, nor difficulty of breathing, and was always active.

3.—*Two Cases of Fungous Tumours of the Cardia.* By WILLIAM BROWN, Esq. Pres. R. C. S.

CASE 1.—James Scobie, aged 55. He first applied for advice in July 1824, and had then been for some weeks ill of a stomach complaint. Under the usual remedies he became somewhat better, and went to the country. In the beginning of October, his ailment put on a more serious appearance. Difficulty of swallowing occurred; or rather, after swallowing, he felt that the food lodged somewhere, and often, but not uniformly, needed to be brought up again. He had also some fulness and fixed pain in the epigastrium, which abated, however, under the use of mercury with Dover's powder. He now became emaciated and weak, but he continued to have a good appetite, swallowed tolerably well, and walked out almost daily.

On the morning of 29th November he was in his usual health, but after breakfast became sick and attempted to vomit. When seen in the evening he felt little pain, but was faint and restless, the surface cold and pale, and the pulse hardly perceptible. He died in about eighteen hours after the attack of sickness.

On dissection, the intestines were found to contain a great deal of blood. The stomach was enormously distended with that fluid in a grumous state. When this was removed a large cauliflower tumour appeared, surrounding the cardiac orifice. Every thing else was healthy.

CASE 2.—John Paterson, aged 69, applied in February 1826, when he had been ill for some time. He rejected food almost immediately after being swallowed, and along with the food a large quantity of mucus. He was much emaciated—pressure of the epigastrium gave pain which had been repeatedly relieved by leeching. He used with advantage a mixture of magnesia and rhubarb with peppermint water, and under this the vomiting ceased entirely for nearly a fortnight. This distressing symptom, however, returned; and after being occasionally mitigated by effervescing draughts and by solid opium, became incessant, and he died exhausted on the 21st of March.

On dissection, a fungous tumour was found to surround the cardiac orifice of the stomach. The mucous membrane of the stomach was generally of a dark colour, as was the peritonæal covering of the intestines. The great intestines contained a large collection of very hard scybala.

4.—*Two Cases of Diseased Pylorus.* By Dr DAVID HAY, F. R. C. S.

The following cases of diseased pylorus, which were both examined by me during last year, present considerable similarity in symptoms. In both there was great emaciation without much positive or continued suffering; absence of vomiting, a general attendant of pyloric disease; the red or beefed tongue; œdema of the lower extremities; and in neither was any external indication given of the alteration of structure discovered on dissection.

CASE 1. —— Paton, aged 63. During the last twelvemonths he has gradually declined in health, losing appetite, flesh, and strength. He has been affected with cough, attended by profuse glairy expectoration, occasional pain of the left hypochondrium, which became constant and severe during the last three days of his life; his legs swelled and pitted on pressure, and his countenance became sallow and leucophlegmatic. He was not subject to vomiting, and his bowels were easily kept regular. His tongue during the whole course of his illness was red and tender, and his thirst was very distressing.

Two days after his death, the thorax and abdomen were examined. Some fluid was found in both cavities of the pleuræ, most on the right side, and some old adhesions existed towards the back part of the lungs. The upper portions of both lungs were healthy, the middle gorged with red watery fluid, and the lower portions of both were condensed, and showed partial suppurations or small circumscribed cavities, containing purulent matter.

In the abdomen the omentum was found much wasted. The stomach at its large extremity adhered to the diaphragm by a strong band of the size of the mouth of a wine-glass; the pyloric extremity was much altered from the healthy state, thickened to a cartilaginous degree all round, and forming a considerable tumour across the spine; when slit open the inner surface appeared irregular, and in some points ulcerated. The rest of the stomach was healthy.

The upper surface of the liver seemed harder than natural, but not otherwise diseased.

The right kidney presented several projections from its convex edge, which were vesicular or cellular, and when cut into found to contain urine. They appeared to communicate by small ducts with the pelvis. Some of the cells were capable of containing bodies of the size of chestnuts.

Case 2.—Alexander Paton, aged 41. Appearances on inspection.

The body was much emaciated.

Thorax.—The lungs were healthy, the pericardium contained about four ounces of limpid fluid. The surface of the heart was sodden like, and completely divested of adipose substance.

Abdomen.—The omentum adhered to the subjacent surfaces of the stomach, colon, and small intestines, and its edge on the left side was attached to the abdominal parietes.

The liver was healthy, the lower surface of the left lobe was closely attached to the smaller extremity of the stomach. On attempting to separate this adhesion by the knife, an ulcerated cavity was exposed formed by the lower surface of the liver and upper surface of the stomach. The latter had been destroyed by ulceration to a great extent. The edges of the ulcerated stomach were thick and spongy, and the mucous surface extensively covered with a cauliflower growth, very irregular, and variegated in colour. The fungous growth extended to and surrounded the pyloric orifice. The larger extremity of the stomach was healthy.

This patient never suffered from vomiting, but frequently complained of pain in the left side, rather below the region of the stomach.

His tongue was always red and shining, and latterly very tender. During the last four-weeks of his life, he was affected with diarrhœa. His health had been impaired upwards of two years, and during that time and previously he had been troubled with cough and mucous expectoration. His limbs before death became œdematous.

5.—*Three Cases of Ulcerative Destruction of the Coats of the Stomach.* By Dr Craigie, F. R. C. P.

Case 1.—On the 28th of June 1830, I had occasion to inspect the body of a man who, after having been long in a state of bad health, as a patient of the Royal Public Dispensary, had died in an obscure apartment in a close in the Grassmarket.

He had first applied for assistance in consequence of an attack of profuse *hæmatemesis*, which subsided under the usual remedies, but recurred several times less abundantly. These attacks, with gradually increasing weakness and emaciation, obliged him repeatedly to suspend, and finally abandon his ostensible occupation of a hawker of small wares; and for a long time before death, though not confined to bed, he lived in a state of inactivity, unable to follow steadily any employment. His general symptoms were not very distinctly described; but it was stated, that though he had stomach complaints, and always complained of a sense of sinking and craving, with great general weakness, he never had laboured under habitual vomiting of the *ingesta*. Notwithstanding the repeated attacks of *hæmatemesis*, he never made any complaint of acute pain of the epigastrium or the region of the stomach.

The gentleman by whom he was attended assured me, from his emaciated and enfeebled aspect, that he had no doubt of the existence of organic disease of the stomach.

Upon opening the chest and abdomen, and exposing the cavity of the latter, the inferior margin of the liver was observed covering the stomach, and an oblong layer of coagulable lymph extending over both, and forming a common covering. This lymph was soft and recent, and could easily be removed. Upon examining more attentively the relative position of the different parts, the stomach was observed to be shrunk or contracted between the liver and the transverse arch of the colon, so that but a small proportion of it comparatively came into view, while the liver and transverse arch of the colon chiefly occupied the visible boundaries of the epigastric region. Towards the left margin of this region, indeed, and in the left hypochondriac region, the stomach was entirely out of view; and it was only in the epigastric region that a small portion of it was visible.

Upon examining without disturbing the relations of the lymph where it covered the inferior margin of the liver, it was found to increase somewhat in thickness and to extend below, along the concave surface of the liver between it and the stomach, and adhering very closely to the peritoneal surface of the latter organ. I was now satisfied from the position of this albuminous exudation, that it was very likely to have been occasioned by inflammation commencing in the peritoneal coat of the stomach rather than in that of the liver, and upon tracing one margin of the patch of lymph, not only was this manifest, but it further appeared that the other tissues of the stomach had been completely destroyed, the lymph allowing a very slight escape of air from a minute aperture at the lower margin.

As the nature of the case was now manifest, it became requisite to proceed with the examination so as to derange as little as possible the relative position of the parts.

I therefore detached entirely the transverse arch of the colon from the stomach, and found that organ unusually shrunk, and occupying a much smaller portion of the epigastric region than naturally. The whole organ was then examined carefully; but no hardness, preternatural thickness, or other unusual characters could be recognized, except the layer of albuminous exudation at the anterior surface and towards the pyloric end, already mentioned. The stomach was removed with the adherent part of the liver from the *cardia* and the *duodenum*, and slit open along its large arch, when the following appearances were observed.

A very small quantity of semifluid food was found at the splenic end, and the whole mucous surface was covered with the usual mucus, but without vascularity. The *rugæ* were large, and the large veins of the stomach in the submucous tissue were loaded.

About two inches from the pylorus, in that part of the stomach which is anterior to the line of the small arch, was an aperture of an elliptical shape, about an inch long and three quarters of an inch broad, its long diameter not corresponding with that of the stomach, but rather intersecting it obliquely.

The edges of this aperture were sharply cut, as if the part had been punched out by a sharp circular or elliptical instrument. They were quite free from induration, tubercular deposit, thickening, or any other morbid change except sensible injection and vascularity along their margins. The mucous membrane appeared as if it had been destroyed to the greatest extent; but this might be an illusion dependent on the retraction which had taken place to a greater degree in the part first destroyed. The muscular tissue was also retracted, though not equally; and it appeared to be chiefly to the influence of this layer that the elliptical shape of the aperture was attributable. The peritoneal coat was least destroyed and least retracted, the opening in it, though elliptical, being of the size of a sixpence. This was completely filled up by lymph, which had been effused from the adjoining peritoneal coat of the concave or lower surface of the liver, so that the contents of the stomach had not escaped. The surface of the lymph forming the inner or gastric surface of the aperture was covered by brownish-coloured matter, which seemed like darkened blood, and the peritoneum, both of the stomach around the aperture, and also that of the liver, was much injected and vascular.

The fat of the omentum and mesentery was completely removed; but some was observed round the kidneys. The muscles were of the natural colour. The general appearance of the body was emaciated and wasted; and the countenance presented a haggard appearance.

I think it is impossible to doubt, from the position of the ulcer in this case in the course of the small curvature, that the profuse hemorrhage proceeded from erosion of the trunk or branches of the coronary artery of the stomach.

CASE 2. Robert Smith, aged 51, was admitted into the Royal Infirmary on the 7th of March 1833, with the following symptoms. He complained of severe cough, with profuse but difficult expectoration of black viscid mucus, difficulty of breathing, aggravated at night and by walking any distance, and alleviated by the erect position and rest. He slept badly, had much thirst, much general weakness, and some wasting. The appetite was good, but he was squeamish, and vomited after taking his food. The tongue was nearly clean, the bowels were reported open, the skin warm, and the pulse 94.

He had been unwell for at least five months.

The treatment consisted of the mucilaginous mixture with occasional anodynes, the squill mixture, and some occasional medicine for the bowels. He was also allowed full diet, and a pint of porter daily, and on the 15th beef-tea in place of broth, which disagreed with him. He proceeded with much the same symptoms for about a month or rather five weeks, gradually but steadily declining in flesh and strength, and with complete failure of the appetite. On the 21st of April, he was in a state of extreme debility, had ceased to take food, and refused even the porter, which he had hitherto taken with relish and apparently good effect. The pulse was extremely feeble; he lay in a helpless state, and either did not answer questions, or did so in an incoherent and confused manner. He was allowed to take six ounces of port wine diluted with water, and occasionally a small quantity of spirits and water. In this state he lingered for about twenty-four hours, and death took place on the 22d of April, without struggle or uneasiness.

I inspected the body on the 24th, when the following appearances were recognized.

On opening the chest, slight adhesions were observed connecting the *pleura* of the right lung to that of the ribs and the lobes of both lungs to each other. The lower margins of both lungs were extremely emphysematous and distended in some places into large bladders. The substance of the lungs was doughy, inelastic, and extremely dark-coloured, with bloody serum effused into the pulmonic filamentous tissue, especially towards the centre of both lungs.

The tracheo-bronchial membrane was of a red-brown colour, and the bronchial tubes were filled with viscid red-coloured frothy mucus, which flowed from them abundantly on pressing the substance of the lungs. The bronchial membrane was reddened and embrowned, in some places slightly villous and elevated. In some parts the canals were contracted, in others slightly but preternaturally dilated.

The *pericardium* contained about five ounces of serous fluid. The heart was generally enlarged and flattened, its base broader than natural, and its apex obtuse. The right auricle and ventricle of the heart were dilated to at least twice their natural size, and distended with dark-coloured blood, partly coagulated, and partly fluid. The left ventricle was also dilated, and its walls slightly thickened. The valves were generally but slightly indurated.

Upon exposing the abdominal cavity, the epigastric region was observed to be occupied chiefly by the liver, the transverse arch of the colon, which was prominent and distended, and a small part of the stomach, which was shrunk and contracted between these two organs.

The whole *peritoneum*, both of the intestines and that lining the abdominal muscles, was highly and distinctly injected, and presented numerous red vessels and points dispersed over its surface. The contiguous folds of the intestines were united with each other by albuminous exudation, a layer of which was also observed extending along the transverse arch of the colon, especially at its union with the large arch of the stomach.

The pyloric division of the stomach was covered and concealed by the left lobe of the liver, the inferior margin of which, with the transverse portion of the colon, was covered by a layer of albuminous exudation, soft and straw-coloured, but as thick as a crown-piece.

It was now evident that peritoneal inflammation had taken place over and under the inferior margin of the left lobe of the liver, and probably over the peritoneal surface of the stomach; and in order to derange as little as possible the relative position of the parts, an incision was made into the stomach below, when it was observed that the tunics of that organ had been completely destroyed in an elliptical-shaped ulcer, about one inch from the *pylorus*, and that their place was supplied by the inferior or concave surface of the left lobe of the liver.

The stomach was now entirely removed, in order to examine more attentively the relations and characters of the ulcer; and the following facts were observed. I may mention, that circumstances did not permit to remove the portion of the liver in its relative position to the stomach, otherwise the preparation, which is now before the Society, might have been perhaps more perfect.

The ulcer is situate about one inch or one inch and a-half from the pyloric ring. It is placed in the small arch of the stomach, that is towards the upper and posterior part of the stomach; the ulcer is elliptical in shape, the long diameter being in the direction of the transverse axis of the stomach; and it is very accurately bisected by the line of the small arch.

Examined at the mucous surface of the stomach, the elliptical shape of the ulcer appears to consist of two circular segments united by their straight side, one anterior to the line of the small arch, the other posterior to that line, the posterior circular segment being the largest. The longest diameter is, as already stated, in the direction of the transverse axis of the stomach, and the shortest diameter corresponding very correctly with the course of the small arch and gastro-hepatic epiploon and the course of the coronary artery of the stomach.

The long diameter of the ulcer is, at the average expansion of the parts, about one inch and a-half, or one inch and five-eighths; and the short diameter of the ulcer,—corresponding to the long diameter of the stomach, is about three-fourths of an inch, and in one part of the posterior division of the ulcer, it amounts, when measured by scale and compasses to seven-eighths.

The edges of the ulcer are sharply cut out, as if the mucous membrane had been punched out from the part by a very sharp elliptical-shaped instrument. The membrane forming the edges of the ulcer presents a little thickening, but no induration, or irregularity, and no new product or tubercular deposit. The mucous membrane is most retracted, and allows a small portion of the muscular and submucous tissue to be seen projecting within its outline. The surrounding mucous membrane is natural, void of thickening, softening, or induration, and of its ordinary tawny colour.

The muscular layer is destroyed, but not to the same extent as the mucous coat;—a small portion of muscular and submucous tissue, of the breadth of a line or a line and a-half, being visible, all round the ulcer, and forming a sort of basis of smaller extent than the ulcer of the mucous membrane. When the ulcerated portion is held between the eye and the light, it is easy to recognize the course of the muscular fibres.

The peritoneal coat of the stomach was also destroyed, except at the part corresponding to the course of the small arch and gastro-hepatic *omentum*; and here the ulcerated aperture was, as it were, bisected by a loose, ragged, irregular column of filamentous tissue, adipose tissue, blood-vessel, and peritoneum, exactly where the small or gastro-hepatic *omentum* connected the concave surface of the liver to the small arch of the stomach, and evidently the residue of that part of the epiploon.

The persistence of this portion of the gastric tissues gives the ulcer, which at the mucous or inner surface of the stomach is single, the appearance of being divided into two parts, which indeed it is externally or at the peritoneal surface.

The outer or peritoneal surface of this part was applied to the liver with the interposition of a layer of soft, recent, straw-coloured lymph ; but it was chiefly the posterior half of the ulcer that thus was covered and defended by the liver. The anterior portion, which was smallest, was covered by a layer of lymph, which extended at once from the convex and concave surface of the liver, and, in the ordinary state of distension of the stomach, prevented the contents of that organ from escaping into the peritoneal cavity.

In the course of examining the parts, however, a very slight force detached this lymph, and some air escaped from the stomach by the opening thus made.

The pyloric ring presents a small ulcer of the mucous membrane, also elliptical in shape, and with the long diameter corresponding to the transverse diameter of the stomach. In this instance the mucous membrane is destroyed, with great accuracy and regularity, so as to expose the submucous filamentous tissue at the bottom. The long diameter of this ulcer is three-eighths and a-half, and its short diameter is about one-eighth and a-half.

The mucous membrane of the stomach was generally reddened and thickened, especially in the immediate vicinity of the ulcerated aperture, but no change of structure, or fibrous, fibro-cartilaginous or tubercular degeneration of the gastric tissues was cognizable.

There was no particularly morbid appearance in any other part of the stomach or any part of the intestinal tube. The duodenal and ileal mucous membrane was natural. In the former the extremity of the *ductus communis choledochus* was particularly large, distinct, and prominent, and though the duct readily admitted a probe, the membrane was rather thickened. The papillary eminence was so prominent that it resembled a small nipple.

The son of this person assured us that his father, though long in delicate health, and feeble, did not make much complaint, did not habitually reject his food by vomiting, and did not complain of urgent pain or uneasiness.

The contents of the stomach were chiefly a semifluid blackened mass, somewhat like coffee-grounds, and this was most abundant about the margins of the ulcerated aperture.

Case 3. Caroline Tait, a girl in the condition of a servant, aged 25, of rather fair complexion, with delicate skin, good features, and chestnut-coloured hair, had for several months previous to January 1833, suffered much from dyspeptic symptoms, for which she had tried a variety of the ordinary tonic remedies with occasional relief. Though of active habits, she had felt weak and languid for several days in the beginning of January; and on the morning of the 12th, after a sensation of weight and oppression at the epigastric region, ascending towards the breast and arms, she was attacked with a feeling of sudden faintness, and speedily vomited a large basin full of blood, and after an interval of about four hours, half a basin full more.

She was immediately seen by Dr Omond of this city, who found her with an anxious countenance, the surface cold, much pain at the pit of the stomach, the pulse for some time not perceptible, and the respiration languid, and attended with deep sighs. A sinapism was directed to be applied to the epigastric region, pills of acetate of lead and opium were ordered, and the patient was instructed to acidulate her drink with the dilute sulphuric acid.

In the evening, the heat of the surface was somewhat restored, the pulse was perceptible and stronger, and the patient could speak distinctly though feebly. Vomiting, however, of everything taken continued, and some dark-coloured motions had been passed. A solution of sulphate of magnesia acidulated with sulphuric acid was directed to be taken, and a blister was applied to the epigastric region.

Next day, the vomiting of blood had not recurred, the skin was warm, the pulse natural, and fluids had been taken several times without exciting vomiting. She complained, however, of pain of the chest, and a constant sensation of approaching faintness, and the bowels were still confined. The sulphate of magnesia mixture was continued, with the addition of the compound rhubarb pills.

In the evening of the same day, some florid blood was brought up by vomiting, and on the 14th much dark-coloured blood was rejected. The patient complained much of ringing of the ears, and the pulse was quick and bounding. An enema brought away some dark-coloured matter from the bowels, and under the use of acetate of lead in solution, with an anodyne at bed-time, the stomach became less irritable, the skin warmer and moist; the discharge of blood ceased on the 17th, and the appetite returned,—leaving, however, a considerable degree of weakness.

This girl appears now to have continued free from permanent complaint for the space, according to her own statement, of ten months, when she began gradually to complain of gnawing pain about the lower end of the *sternum*, so severe, especially at night, that she could not endure the weight of the bed-clothes, with some pain in the lumbar region, between the *scapulæ*, and in the right *hypochondrium*. With this was united a pretty constant sense of squeamishness, which occasionally terminated in vomiting, and occasionally induced her to excite that action artificially,—generally with relief.

Occasionally at this period she was attacked with *pyrosis*, especially in the morning, was annoyed with flatulence, so great as to cause pain, and had fits of palpitation; but no chills, flushes, or *cardialgia*. With these symptoms she was admitted into the Clinical Ward in April 1834, and was treated there with laxatives, antacids, and tonics, apparently with great benefit, and went out cured in the beginning of June.

About the 13th, however, she was attacked with griping pain of the bowels and left iliac region, followed by vomiting of dark bilious matter, which has recurred two or three times daily, with increase of the severity of the pain, especially upon any exertion. She complained also of a gnawing pain of the back, in the lumbar region, which obliged her to stoop forward. These symptoms, which she attributed to a great effort made in lifting a heavy weight two days previously, obliged her again to apply for assistance, and she was re-admitted on the 18th of June 1834. Here she continued till the 28th of July, with the dyspeptic symptoms very much relieved, and the pain of the left iliac region sensibly abated, after the application of leeches, and that of the lumbar region at least relieved after the application of a blister, blood having previously been drawn by cupping without benefit. The rest of the treatment consisted chiefly of the exhibition of laxatives, especially the colocynth pill, and an emetic once to remove a sensation of sickness, and pills consisting of extract of henbane and aloes.

This girl was re-admitted on the 1st of October with the dyspeptic symptoms almost as distressing as before; but besides these, the pain in the back and left iliac region were more severe and enduring, and she had also much squeamishness and pain in the bowels, which had formerly been only slight and transitory.

The bowels were relaxed by the aloetic pill; the effervescing draught was given to check the squeamishness, and blood was drawn from the iliac region by means of twenty-four leeches, with the effect of alleviating much the pain. On the 4th, however, another attack of severe pain, very deeply seated in the epigastric region, though without sickness or vomiting, with the pulse at 108, and the tongue foul, ensued; and the application of twenty-four leeches, the exhibition of some opium, and minute doses of a solution of the tasteless salts, were prescribed, with considerable but temporary relief. On the 5th, an accession of intense pain in the back, bowels, and side, took place, but subsided under the use of anodynes. On the 7th calomel and opium was given, with the effect, apparently, of removing the pain of the belly, and a blister applied to the back on the 8th relieved much the pain of the lumbar region.

It would be tedious, however, to enumerate all the variations in the symptoms of this case, or the different remedies employed to relieve or oppose them. It may be sufficient to say, that the pain deep in the back was at all times the prominent and most constant complaint of the patient, that it was described as passing sometimes to the epigastric region, sometimes to the left hypochondriac or iliac region, and that it was attended with a most overpowering sense of internal weakness and sinking. On the 19th, as the pain was represented to be accompanied with pain on pressure along the course of the lumbar vertebræ, after the application of twelve leeches to the left hypochondriac region, a caustic issue was established on each side of the lumbar *vertebræ*. Pain of the bowels continued, accompanied with frequent gelatinous motions, mixed with blood and purulent matter; and for these symptoms a mixture of catechu and opium was directed to be taken; and at the same time she was allowed wine, beef-tea, and arrow-root.

On the 26th of October 1834, when I resumed the charge of the ward, I found the pain of the lumbar region still the prominent and urgent source of complaint, with little or no pain of the belly, the pulse at 84, the tongue coated with a viscid brownish fur, much complaint of thirst, and each cheek occupied by a reddish circumscribed patch.

The pain of the lumbar region was described as deep in the back; but the patient always pointed to the space forming the epigastric and umbilical region, and as if it were seated in the anterior part of the spine, or very deeply among the abdominal viscera. It was described as a sense of constant gnawing weariness, as if it would cut the back in twain, and invariably preventing the patient from resting long in any position. It was not relieved either by pressure before or by support behind, and there was no complaint of the surface of the lumbar region except from the caustic issues, which were now rendering her very uneasy and uncomfortable. The pain referred, as now described, to the abdominal part, as it were, of the lumbar region, was further accompanied with some pain across the epigastric region, which became severe at intervals, and interrupted sleep a good deal. The belly was rather distended in the umbilical region, and though she did not complain of constant tenderness, it did not endure pressure without much uneasiness.

I was considerably perplexed as to the exact nature of this affection which had been so long under treatment, and which had resisted so many remedies. But, as I thought from the history of the case and the present symptoms, especially the tenseness of the pulse, the hectic flushes, and the profuse sweatings of the head and face, that there might be either chronic inflammation or ulceration of the mucous membrane of some part of the intestinal tube, I thought it would be right to give up the catechu, and adopt the use of the amylaceous and opiate enema, and draw blood from the belly by leeches applied as near to the site of the pain as possible. This was done three times with benefit; and the wine was also interrupted. On the 2d of November, however, the pain of the belly continued with such severity and obstinacy, after the last application of the leeches, with the pulse at 108, small and sharp, that I thought it might be expedient to try the effect of a general blood-letting, and I accordingly detracted about eight ounces of blood, with the effect of producing faintness and much alleviation of the pain. This was followed by the exhibition of a scruple of Dover's powder. Next day the belly bore pressure well, and the patient coughed with ease; but the skin was still hot and dry, and the pulse was 108, fuller and stronger than the previous day. An enema of castor oil was directed to be given, and in the event of the pain of the belly recurring, blood was to be drawn to the amount of ten or twelve ounces. As the operation of the castor oil had induced some uneasiness, an anodyne enema was administered immediately after with the effect of procuring some temporary relief. The belly, however, was still tense and tender; and as there was a distinct accession of fever with pain in the evening, eleven ounces of blood were drawn from the arm, without producing faintness, and with the effect of procuring a good deal of ease and sound sleep during the night. Next day the pulse was 100, still rather strong, and though the abdomen was rather tense the pain was entirely gone. The diet was directed to be confined to small quantities of sago or arrow-root, with milk; a scruple of Dover's powder was directed to be taken at bed-time, and some castor oil in the morning.

At this time diarrhœa in the form of frequent loose but scanty motions came on, with great weakness and some œdema of the hands and feet. There was, however, no abdominal pain, but the pulse rose to 120 and 132, and was very weak, and occasionally hiccup took place. The diarrhœa was opposed by acetate of lead and opium; for the hiccup draughts of muriate of morphia and sulphuric ether were administered; a few ounces of wine were allowed in the course of the twenty-four hours, and the patient's strength was supported by sago, animal jelly, milk, and coffee *ad libitum*. The symptoms continued to increase; the flesh and strength declined rapidly. On the evening of the 10th of November, the respiration became quick, panting, and laborious, and death took place between one and two on the morning of the 11th.

The abdomen was inspected thirty-six hours after death, when the following appearances were recognized.

Upon exposing the cavity of the abdomen the bowels were observed to be slightly distended with air; but the peritoneum was not in any part of the intestinal tube opaque, reddened, or injected.

The liver covered with its left lobe the stomach, which lay shrunk and almost concealed between that organ and the transverse arch of the colon.

A considerable patch of albuminous exudation covered the inferior margin of the left lobe of the liver, and extended thence over the anterior wall of the stomach, about three inches from the pyloric extremity. As the true nature of the case was now pretty evident, I requested the prosector to detach the transverse arch from the stomach, to apply a ligature to the cardiac end of the latter, and to remove it along with the liver, without deranging the position of the parts. After ascertaining accurately the portion of the stomach adhering to the liver, the former organ was slit open, and the following facts were ascertained.

The tunics of the stomach were in the course of the small arch of that organ about three inches from the pyloric end completely destroyed by ulceration, in a circular shape, to the extent of about the size of a half-crown piece; and this ulcerated aperture had taken place so completely in the course of the line of the small arch, that one semicircle of the destroyed portion was anterior, and the other posterior to the line of the small arch. The wall of the cavity of the stomach of the anterior semicircle was formed by the concave or inferior surface of the liver, the peritoneal coat and part of the substance of which was dissolved; and the wall of the ventricular cavity of the posterior semicircle of the aperture was formed by the pancreas, part of which also had been dissolved.

The edges of the aperture were sharp and abrupt, nor was there any mark of induration, thickening, tubercular deposit, or any other change in their vicinity. The peritoneal coat outside was reddened, vascular and injected.

None of the contents of the stomach had escaped into the cavity of the peritoneum, as that was completely covered by the effused lymph.

The preparation of the parts of this case is preserved in the Museum of the University.

The inspection in this case afforded a most satisfactory solution of the most prominent and urgent symptoms. In whatever mode the ulcer, which had destroyed the tissues of the stomach, had originated, its situation in the line of the small arch had, by cutting across the trunk and branches of the coronary artery of the stomach given rise to the symptoms of profuse and repeated *hæmatemesis.* At the same time the adhesive inflammation appeared to have eventually sealed up these vessels, as no hemorrhage of any consequence had taken place for months previous to the fatal event.

The situation of this large ulcer also appears to account, not only for the constant enduring and gnawing pain referred to the depth of the umbilical, epigastric, and lumbar region, but also those more temporary paroxysms of pain which the patient referred to the epigastric and the left iliac regions. Not only had this ulcer cut across several of the filaments of the pneumogastric nerve which accompany the coronary artery across the small arch, or the anterior and posterior œsophageal plexus, (*plexus nervorum gulae prior et posterior,*) but by dissolving part of the pancreas, especially at the very part where some of the filaments of the pancreatic plexus enter its substance, and by exposing the divided extremities of these filaments, it necessarily created great irritation at the extremities of the splanchnic nerve. The first circumstance seems to account for the pain in the region of the *scapulæ*, the pain at the lower end of the sternum, and the pains in the neck, and occasional sense of weakness and oppression.

The second circumstance, namely, the exposure of the pancreatic substance and the filaments of the pancreatic plexus, and the irritation propagated to the larger branches of the splanchnic nerve, appear to me to afford the explanation of the deep-seated gnawing pain of the back and belly; and I think it also quite consistent with our knowledge of the effects of nervous irritation to infer, that the injury done to the branches of both orders of nerves, viz. the pneumogastric in the small arch, and the splanchnic in the *pancreas*, was the cause of the overpowering sense of sinking and feebleness, from which the patient was almost at no time free.

Though I feel forcibly the difficulty of drawing any general conclusions upon this variety of lesion from so small a proportion as three cases, yet, as several of the circumstances agree so closely, they have almost inevitably forced on me certain general considerations, which it may not be seasonable here to introduce; and in so doing, I offer them as mere conjectures, the validity of which may be determined by more competent judges.

In the *first* place, it is a fact particularly deserving attention, that, in each of the three cases, the ulcerated aperture was situate in the small arch of the stomach, and, indeed, that, whether it commenced exactly in the line of that arch, or on the anterior or the posterior part of it, it destroyed the mucous membrane, on the anterior and the posterior side of the line, very nearly to equal extent. I regret that circumstances prevented me from obtaining the parts in the first case; but I know that I remarked this peculiarity in my notes of the appearances; and I have only to appeal to the preparation now before the Society, and to that which is preserved in the University Museum, in proof of the accuracy of this statement.

It is, in the *second* place, important to observe, that in each of the three cases now detailed, the shape of the ulcerated patch was elliptical, or at least like that formed by two circular segments united by their rectilinear side, and so situate that the long diameter of the aperture was at right angles to the long diameter of the stomach. This peculiar configuration of the ulcerated apertures when thus situate, I think may be explained by reflecting on the natural disposition of the muscular fibres of the stomach. The circular or transverse fibres of the stomach being more numerous and powerful than the longitudinal fibres, or rather I may say, the muscular layer consisting chiefly of circular or annular fibres, it results that, when these are cut through at any given point by the process of ulceration, the divided ends necessarily recede or retract, and thus draw apart the margins of the ulcer more forcibly and to a greater extent in that direction, than in the long direction of the stomach.

It is, in the *third* place, a common character of these three cases, that they were not the effect of any tubercular or scirrhous disorganization of the stomach, and that, so far as could be judged, the ulceration was the result of inflammation of the mucous membrane of the stomach. It is to be observed also, that this inflammation does not appear to have been of the acute, spreading character, but circumscribed in its action, chronic in duration, and passing from the mucous to the submucous tissue, and thence to the muscular and serous. There is no doubt that inflammation of the mucous membrane of the stomach may assume at least two forms; the one acute and spreading, in which it passes like an erythematous redness over the surface of the mucous membrane from one point to another, but rarely penetrating into the substance of that membrane, or to the subjacent tissues; the other affecting chiefly the substance of the mucous membrane, not spreading in its action, but circumscribed and confined more or less accurately to a point or points, passing to the submucous and muscular coats of the organ, and generally chronic in its character and progress.

The former species of inflammation gives rise to more or less disorder of the constitution, with symptoms of *synocha*, and pain over the site of the stomach, with squeamishness, sickness, and vomiting of all *ingesta*. The latter rarely produces much uneasiness or general disorder; sickness and vomiting are rarely observed, or take place only at intervals, and on particular occasions; and the pulse is very seldom affected till towards the close of the disease, when probably the action has begun to affect the *peritoneum*.

It is evident that, in the cases now detailed, the action, whether originally inflammatory, or ulcerative from the very first, was of the latter kind. In neither of the cases did it give rise to much suffering, to well-marked symptoms of general disorder, or to symptoms which we might have expected to attend the disorder and destruction of the textures of an organ so important as the stomach.

In the case of the girl Caroline Tait, the chief alarming symptoms were produced by the hemorrhage from the stomach, and not by the inflammatory or ulcerative action from which this proceeded. The constant and enduring sense of gnawing pain was felt chiefly at the latter stage of the disease, when there was reason to believe that the mucous membrane had been destroyed, the muscular destroyed and exposed, the peritoneum in a state of inflammation, and the nervous filaments distributed to the part were exposed to the action of the alimentary articles and gastric secretions.

Fourthly, Connected with the facts now mentioned, I may remark, as a fourth peculiarity in the cases now under consideration, the moderate degree or total absence of the symptoms of gastric disorder. In all the three cases, there were no marked symptoms of intense or alarming disorder of the functions of the stomach. With the exception of symptoms of indigestion, which gave way to remedies, it was impossible to specify or recognize any prominent or conspicuous phenomena, by which the physician could be led to infer the existence of destruction of the gastric tissues so extensive. There was no constant squeamishness; the food was not invariably rejected by vomiting; pain even was not constant unless towards the close of the complaint; and the patients, though not strong, were able to go about, and live without much uneasiness.

These peculiarities may depend, I conceive, on two causes, *first*, on the local or circumscribed character of the affection, and *secondly*, on the position of the ulceration. Of the first I have already in some degree spoken. As to the second, it is clear that the position of the ulcers in these cases, in the small arch of the stomach, and consequently at the superior and posterior region of that organ, was such as to expose them less to motion or to disturbance by the alimentary articles. As the alimentary mass is propelled chiefly along the large arch and the anterior division of the stomach, and as gravitation also concurs in confining it to this region, any ulcerated or inflamed surface situate towards the superior and posterior region of the organ, is much less likely to suffer, or be unduly irritated by the transition of these articles, than a similar inflamed or ulcerated surface situate at the inferior region, or along the large arch of the stomach.

Fifthly, the cases now detailed are examples not so much of *perforation* as of *ulcerative destruction* of the gastric tissues. Though these tissues were destroyed from the mucous to the serous included, yet the cavity of the stomach was not, strictly speaking, laid open, nor did the contents of the organ escape into the general abdominal cavity. The principal reason of this immunity also was the position of the ulcers, which were so situate that when the gastric tissues had been removed, the contiguous organs supplied their place, and formed as it were walls to the ulcerated breach, preventing the escape of the contents of the stomach.

In the *sixth* place, these cases are remarkable in presenting a very limited and local form of peritoneal inflammation. In two of the cases the traces and products of inflammatory action were confined with more or less accuracy to the vicinity of the parts in which the ulcerative destruction had occurred. There was no general inflammation of the *peritoneum*, no general effusion into the peritoneal cavity, no sero-albuminous, purulent, or albuminous exudation generally over the surface of that membrane. The albuminous exudation was, on the contrary, confined to that part of the gastric *peritoneum*, which immediately corresponded to the ulcerative destruction of the mucous membrane, and to the corresponding portion of the hepatic *peritoneum*, and an inch or two around.

In the second case alone there was slight general inflammation of the peritoneum; but even the effects of this inflammation were most conspicuous at the part of the peritoneum corresponding to the destroyed part of the stomach.

The explanation of this peculiarity is also to be found, it appears to me, in the fact already stated of the position of the ulceration having occurred in a part of the stomach to which the liver, or the liver and pancreas, as in the case of Caroline Tait, was applied. As this part of the stomach, namely, the small arch, is comparatively fixed by its attachment to the concave surface of the liver by means of the gastro-hepatic *omentum*, and as it is kept constantly applied to the concave surface of the liver, as the ulcerative destruction proceeded progressively from the mucous to the serous membrane, it naturally encountered the concave surface of the liver, and gave rise to inflammation of the hepatic peritoneum and albuminous exudation from its surface, before it caused the escape of air or the other contents of the stomach.

Had the ulceration taken place in any other part of the stomach, in which the peritoneal covering of that organ was not applied to, and supported by, any other organ, then it would have most likely happened, that the air and alimentary matters contained in the stomach would have escaped, and given rise to a very formidable and general, and consequently speedily fatal peritoneal, inflammation.

That this is the correct explanation of the peculiarities now stated, I think may be inferred not only from cases in which perforation has taken place in other parts of the stomach unprotected and uncovered by the adjoining organs, but from what is observed in cases of perforation of the intestinal canal, where no covering organ is interposed.

6.—*Case of Disease of the Duodenum, &c.* By Dr ABERCROMBIE.

In autumn 1832, a gentleman, aged about 50, came from the country, to consult me respecting an affection of the stomach. His principal complaint was of attacks of vomiting, which occurred at intervals, generally of about three days, sometimes more frequently. They came on at various periods of the day, and when the attack took place, he usually continued to vomit at intervals, for an hour or two, sometimes more, suffering at the same time, severely from nausea, and a sense of oppression across the epigastric region. In the intervals of these attacks, he suffered little uneasiness, but his appetite was much impaired, and he had lost considerably in flesh and strength. His bowels were easily regulated, and his pulse natural. After the most careful and repeated examination, no vestige of organic disease could be discovered, and no tenderness was complained of in any part of the abdomen. The disease was of about a year's standing.

He remained in town several weeks, during which time the symptoms continued with little change. The attacks usually recurred once in two, three, or four days, and at no regular periods of the day, and no treatment seemed to have any effect in preventing them. After some time, however, they became less frequent, recurring only at the interval of a week, and in the intervals, he still made no complaint unless of deficient appetite and loss of strength.

In this state of partial improvement he returned home, where he became rapidly worse, with total failure of appetite, and died gradually exhausted in about a month after his return.

Inspection.—The stomach was healthy, except that its internal surface was of a darker colour than natural, and deeply injected. About three inches from the stomach the duodenum was much thickened and hardened for the extent of about an inch, and the cavity at the part was so contracted as only to transmit a director. The liver presented one mass of white cartilaginous-looking tubercles of all sizes, from that of a pea to the size of a pigeon's egg, and was considerably enlarged, especially towards the left side.

The practical conclusions to be derived from this case are entirely of a negative kind; but these are never to be considered as unworthy of attention. We find this remarkable disease of the duodenum complicated with extensive disease of the liver, unaccompanied by any symptoms of a permanent or rather of a uniform character, and with the total absence of those characters which are usually considered as indicative of disease of the duodenum.

7.—*Perforating Ulcer of the Duodenum.* By Dr Abercrombie.

A lady, aged 30, had been long liable to pain in the right hypochondriac region, which affected her chiefly after meals, and was considerably increased by the motion of her body. On Tuesday evening, 15th November 1829, she was suddenly seized with most acute pain in that situation, which was soon followed by symptoms of ileus, accompanied with a feeble rapid pulse, and appearance of extreme exhaustion. The abdomen became tense and tympanitic, and all the usual means were employed without benefit. She lived, however, till Sunday morning, being upwards of one hundred hours from the attack.

Inspection.—There were the usual appearances of most extensive inflammation, with a thick coating of false membrane, covering every part of the bowels, the liver, and the peritoneum lining the *parietes*. At the very commencement of the duodenum, close to the pylorus, there was an ulcer, less than half an inch in diameter, with elevated edges, and considerable thickening of the surrounding parts. It was so deep in the centre that it appeared to have been bounded only by the peritoneum covering the part; and this had given way by a round opening about one-sixth of an inch in diameter. The edges of the excavation itself had that smooth and cicatrized appearance which has often been described in similar cases.

The remarkable feature in this case is the length of time from the attack to the fatal termination. The usual period, in my observation, has been from eighteen to thirty hours, and it appears that some of the French cases were fatal in five or six hours. This difference in the rapidity of the symptoms produced by the escape of fluids from the stomach or intestines into the peritoneal cavity, may be supposed to depend partly on the quality of the fluids. But something would also seem to depend on the state of the parts; and there are facts which would seem to show that a morbid cavity is less affected than the healthy peritoneum. This conjecture seems to be illustrated by a case which I saw during the present season with Dr Robertson and Dr Mackintosh. The patient was a child between 5 and 6, and the case began with symptoms of chronic peritonitis. After some time a circumscribed hardness formed round the umbilicus, which gradually became soft and at last burst. The opening at first discharged purulent matter, afterwards thin *feces*, and frequently articles of food in a half-digested state, sometimes little changed. The child lived in this state for about ten weeks; and then died gradually exhausted. On inspection, the external opening was found to lead into a large cavity full of feculent matter. This cavity was formed by adhesions between the omentum, peritoneum, and surface of the intestines, all in a morbid condition; and a portion of intestine, high up in the canal, communicated with the cavity by several openings.

8.—*Case of Enteritis following Pleurisy and the use of Tartar Emetic.* By Dr GRAHAM.

John Latta, aged 29, a cabinetmaker, was admitted into the Clinical Wards of the Infirmary, and placed under my care on the 6th of January last. The symptoms clearly indicated inflammation within the chest, and, as it appeared to me, as clearly proved that inflammation to extend to several textures. The diagnostic symptoms were cough, excited by attempts at full inspiration, which also gave pain chiefly, but not solely, in the anterior and lower third of the right side of the chest. The expectoration was mucous, partly adhesive and rusty, partly globular; in different parts of the chest sonorous and subcrepitant râles and bronchial respiration were indicated by the stethoscope. The mucous râle was even felt by the hand applied to the chest. The respiration was incomplete, 36 in a minute, and performed solely by the diaphragm.* The tongue was brown and dry; the skin hot; the pulse 112, full and firm. The pain had come on while he was at work on the 29th December, but neither this nor the other symptoms were so severe as to prevent his continuing his employment till the 1st January, after which he was confined to bed; but though the symptoms were reported as having gradually increased, no treatment was employed previous to his admission into the hospital.

Treatment.—Immediately on admission he was bled to 14 ounces, from which much nausea; had a blister over the sternum; a solution of tartar emetic, of the strength of four grains to eight ounces of water, was ordered in doses of an ounce occasionally; and a bolus of jalap and calomel was given at bed-time. The blood was very buffy; there was much vomiting after two doses of the solution; nausea was supported by the solution; and on the fourth day after admission, respiration was less completely abdominal. He now took four grains of tartar emetic daily. The *sputa* were frothy and nearly without tinge; the râles were diminished in the right side, and gone in the left; the pulse was 76, and of moderate strength; but the speech was still interrupted, the cough undiminished, and the percussion was dull in the portion of the chest where this was before observed. On the 5th day after admission, nausea was supported by 14 ounces of the solution,—(7 grains of the salt;) on each of the two next days he took 24 ounces of the same strength, with only slight and transient nausea; and on the last evening symptoms of *peritonitis* appeared, after which the solution was omitted. The pain was severe, began in the left iliac region, and quickly extended over the abdomen, accompanied with much tension and greatly aggravated by pressure, the respiration at the same time becoming *entirely thoracic;* the tongue was excessively loaded, and the febrile state became aggravated, and was accompanied with vomiting. It is unnecessary to detail the treatment employed against this new attack. It consisted as usual of leeching, general bleeding, fomentations, enemata, blistering, large doses of opium with and without calomel. This treatment was pushed with the utmost vigour. The patient required the closest watching, and it was not till after many anxious days that I considered him safe.

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* The chest was dull on percussion throughout the right side, except about two-thirds of its lower anterior part; everywhere else percussion was good.

In conclusion, I would only remark, that, though I regard tartar emetic as an excellent adjuvant to other antiphlogistic remedies in inflammatory disease, I have never been able to discover any good effects from it after the constitution became tolerant of it; but the above case has convinced me that in such circumstances it is sometimes worse than useless. Certainly I should have thought the occurrence of inflammation in the serous was less probable than in the mucous coat from the supposed cause, but still I do not doubt that the poison this poor man was swallowing under my orders very nearly cured all his ails in a way which would have been the very reverse of comfortable to me. There was no inflammation whatever of the mucous membrane. The bowels constantly required the use of *enemata* to open them.

9.—*A Case of Ileus from Strangulation.* By W. Beilby, M. D.

A young gentleman, aged 16, after a visit to some friends for a fortnight, during which he lived much more freely than ordinary, was seized on his return, January 14th, with diarrhœa, accompanied with pain around and below the navel.

On the following day the diarrhœa had ceased, but the pain continued, and he could not bear pressure on the lower part of the belly, especially just above the pubes. Bleeding, blistering, and a variety of active treatment was now had recourse to.

On the 17th vomiting came on. He had two pretty copious loose stools at night, and on the next day another; after which, though he lived for a fortnight, the bowels were not moved by all the remedies, medical and mechanical, and they were many, which were employed. The belly became very much distended, and the vomiting constant after any food or drink, and at length stercoraceous; but this distressing symptom ceased after swallowing a pound of quicksilver on the 23d. I may mention, however, as coincident with it, that on the same day he gave up the use of wine and brandy,—one or other of which he had taken in considerable quantity for several days. On the following night he slept well for the first time since his illness commenced, and the next day the tumefaction of the belly was greatly diminished and continued so till the 27th, when it began again to increase. Another pound of quicksilver was now given, after which he complained of great pain, the belly continued to swell, and he died on the 31st.

The body was examined thirty hours after death. There was great emaciation. The belly was enormously distended. The stomach and duodenum were collapsed and natural. A band of coagulable lymph united the *caput cœcum coli* with the sigmoid flexure, and beneath this band a turn of the *ileum* was confined. The portion of the *ileum* below this, nearly three feet, and the whole of the great gut, were empty and collapsed. The remaining portion of the intestinal tube was very much inflated, some part of it being about four inches in diameter, and contained a great quantity of liquid feces of a yellow colour.

On the retained portion of the bowel being disengaged, some of the quicksilver instantly found its way out at the anus.

10.—*Case of severe injury of the Abdomen, terminating fatally, with Dissection*, by John Gairdner, M. D.

Thomas Kay, aged 24, received an injury on the 25th March 1826, from the wheel of a loaded cart passing over the abdomen, and was carried to the Royal Infirmary, where, after the urine had been drawn off, he was bled, fomented, and ordered a purgative injection. On the third day, after he had been bled by leeches on the abdomen, the urine, which had been previously retained, began to pass naturally. The pain was at this time in the left hypochondriac region. Bleedings from the arms, and by leeches, and anodyne and turpentine injections were the remedies employed, and as it appears from the report, with manifest relief. In about a week after the accident dysenteric symptoms came on, with rigors, sweating, occasional vomiting, pain in the abdomen, particularly in the left iliac fossa, and dark fœtid stools. These symptoms were combated by leeches, Dover's powder, castor-oil, pills of calomel, antimony, and opium, with fœtid and anodyne enemata. The pulse was reduced from 110 to 88; the tongue rendered cleaner; the thirst lessened; the character of the stools improved; and the patient discharged at the end of the third week relieved.

At the end of April he became an out-patient of the Old Dispensary, and was under my care. He complained chiefly of severe griping pains of the epigastrium, with considerable flatulent distension in that region, of dysuria, and of thirst, but not of costiveness, the stools being rather liquid, though small in quantity. A draught of castor-oil and laudanum, followed next day by salts and senna, speedily relieved him for the time; but a recurrence of similar symptoms compelled him again to take refuge in the Infirmary, in which, under the care of Dr Spens, he was again relieved by measures similar to those I had employed. After the lapse of a fortnight he left the Hospital, and on the 19th June again applied to the Dispensary, having been seized two days previously with œdematous swelling, and pain of the left lower extremity, from the thigh to the ancle. He had at the same time considerable dysuria, but did not complain of tormina. He was bled, and freely cupped by a pupil of mine, and by this treatment the swelling and pain of the limb were much diminished; but he was suddenly seized four days after the cupping at half-past one in the afternoon with acute pain in the abdomen, and expired at half-past two the following morning, his intellects remaining perfect till an hour before death, when he became a little incoherent and violent.

Adhesions were found between the turns of the small intestine, uniting the greater part of it into one mass, at the lower part of which, in the right hypogastric region, there was an opening from which fluid feces escaped. On separating some of the neighbouring adhesions, it was found that the small intestine was at this part ulcerated throughout nearly its entire circumference. That part of the small intestine which was between the duodenum and the opening was very much enlarged, in some parts to nearly the size of the colon, and distended with fluid feculent matters. Very little feces were actually effused, but some slight traces of increased vascularity were discoverable on several points of the peritoneal surface.

11.—*Case of long-continued Constipation, and threatening of Ileus, terminating favourably.* By Dr Alison.

The following case I think worthy of being recorded, as it is the third which has occurred to me of constipation so obstinate and long-continued, as to impress, I believe, all who saw it with the conviction of its dependence on some kind of organic disease, producing a mechanical impediment to the passage of the contents of the intestines, which yielded at the time when the system was fully affected by mercury.

Thomas Small, aged 50, admitted into the Clinical Ward, November 18, 1834, had been subject for some time to dyspeptic symptoms, flatulence, and slowness of the bowels, and on the 18th day before admission, had taken for these symptoms five of Morison's pills, which operated well, and on the day after, (the 17th before admission), twelve more, at two doses. These did not operate; the pain they occasioned was severe, but subsided in a few days, and he uniformly and positively asserted, that he had no stools from the time of taking them till admission. During this time he had occasional pain of the abdomen, flatulence, and distension, and repeatedly vomiting, but no distinct febrile symptoms. Within a few days before admission he took ℥iss of castor oil, and a strong dose of jalap; but both were vomited, and produced no other effect.

On admission his abdomen was tense and tympanitic, without distinct hardness or dull sound on percussion at any part; his pulse was 68, rather weak; the tongue was foul, but without thirst; and he appeared somewhat emaciated, but his appetite was good.

During the first three days of his stay in the house, he had six pills with one drop of croton oil and extract of hyoscyamus in each, two full doses of castor oil, the purgative enema, three of the tobacco *enemata*, with ʒss of the leaves infused in each; he had also twelve leeches on the abdomen, (which became slightly tender at times), and had the warm bath; but the only effect from these measures was the evacuation of much flatus, and of five or six small hard dark-coloured *scybala*. The rectum was carefully examined by Mr Lizars, no obstruction felt in it, and a flexible tube being introduced the whole length of the rectum, three pounds of warm water were injected without any difficulty, but returned in a short time without feces.

He was quite distinct in his statement, that the effect of each medicine taken by the mouth was to produce a rumbling in the bowels, with griping and increased distension, which went to a certain point, not quite fixed, on the right side of the abdomen, and no farther. He passed flatus, however, pretty frequently, and the distension of his abdomen always very considerable, was variable, both as to its general amount and as to the part chiefly affected with it.

Believing that in these circumstances there was more risk of exciting inflammation than chance of overcoming the obstruction by strong cathartic medicines, I put him on the use of calomel and opium, of which he took six grains of the mineral and one of the drug on the night of the 21st, and afterwards three grains of the mineral and half a grain of the drug, first every six hours, afterwards every eight hours till the 27th, when his mouth was distinctly, though not violently affected. The pills were discontinued on that day, but resumed on the next at longer intervals, and continued till the 1st December, when it was very sore. During this time he was allowed a little beef-tea and ale to support his strength. He had eight leeches over the situation of the cœcum, and a blister to the abdomen; he had the large warm water enema repeatedly without any effect; and twice daily he had the tobacco enema, with two scruples of the leaves, which generally produced nausea, faintness, a discharge of flatus, and relief to pain; but only a few flakes of feculent matter until the 28th,—the 27th day since he had passed at any time more than a few small *scybala* from his bowels, the 7th after beginning the mercury. On that morning, after one of the tobacco enemata, he had a pretty copious evacuation of soft feces. On that night, however, and the next day, although he took two doses of the colocynth pill with hyoscyamus, the discharge of feculent matter by the enemata was again reduced to a few small *scybala*; and on the 29th and 30th, his condition appeared desperate. The pulse was 96, feeble; his tongue dry; he had become rapidly emaciated; his abdomen greatly distended and somewhat tender; he had much nausea and vomiting, and part of the matter vomited had a dark colour and distinctly feculent smell. On 1st December, however, we found that he had had copious evacuation of soft feces during the night, his abdomen was somewhat reduced, and the vomiting had ceased. He had taken gr. x. of calomel, with gr. i. of opium, in divided doses, since the day before, and this was the last of that medicine given. The medicines and enemata were then discontinued, and on that and the two following days, he passed a very large quantity of dark-coloured feculent matter, *all of soft consistence;* and the distension of his abdomen subsided so rapidly that the integuments lay in folds, and he was greatly relieved by a flannel bandage applied round it, as after the operation of *paracentesis.*

After this his mouth continued sore for about ten days; his bowels were generally loose, and he used chalk mixture with tincture of catechu and a little laudanum during most of December; he had hardly any return of vomiting, and his appetite soon became good; but his abdomen was at times partially distended and somewhat pained. At different times in January, his bowels became again confined, with return of distension.

He used the colocynth pills in small doses with quinine, and at times castor oil and tincture of senna. A castor oil draught with oil of turpentine answered well on one occasion, and assiduous friction with oil of turpentine was also employed; but the effect of all these means was so uncertain, that when he was transferred to the charge of Dr Christison at the end of January, I was still very suspicious of the existence of organic disease impeding the natural action of some part of the intestinal canal.

After coming under Dr Christison's care, his bowels were for a few days more obstinately costive, and he took full doses of the colocynth pill with croton oil, which ultimately acted well. After this, the expedient which appeared to answer best in keeping his bowels regular, and restraining the tendency to *tympanites*, was the fetid enema repeated regularly twice a-day. The mercury was never resumed. He gradually regained flesh and strength, and left the house well on the 9th April.

In this case, at the time of the most obstinate constipation, it appeared certain that the greater part of the great intestines acted naturally, from the manner in which the different enemata, and particularly the large enemata of hot water, were returned, after lying from five minutes to half an hour in the bowels; as well as from the soft consistence of the matter ultimately passed; and it seemed equally certain that the greater part of the small intestines acted naturally, from the griping and rumbling, and obvious increase of distension which followed each dose of purgative medicine. The defect of vital action was evidently confined to a small part of the canal; and it seems equally certain, from the whole history of the case, and from the symptoms at the period of greatest danger, that it did not depend on inflammation there. There is, therefore, I think, the strongest probability that it depended on some kind of mechanical impediment; and although we can only conjecture what this may have been, it is certain that it abated suddenly when the system was fully affected by mercury, and when the body was wasting rapidly under its use; *i. e.* when it may be supposed that whatever power the remedy may have of increasing the vital action of absorption, was in full operation.

12.—*Case of Abscess discharged through the Internal Passages.* By WILLIAM BROWN, Pres. R. C. S.

In September 1816, a boy of 10 or 12 years, began to complain of pain about the spine of the left *ilium*, with inability to extend the knee-joint. There was much constitutional disturbance, and the local symptoms did not yield to leeches, blisters, and other remedies used. After some time a large fluctuating tumour was discovered somewhat above the seat of the pain. This suddenly diminished, and at the same time the boy began to expectorate large quantities of purulent matter. He also passed much by stool and urine. The discharge continued for four or five days, and soon after all the symptoms disappeared, and he was restored to health. The whole course of the disease was six or seven weeks.

13.—*Case of remarkable Osseous Cyst attached to the Liver, which had existed for 68 years.* Communicated by Dr Hunter, from the Notes of Dr Smith.

Miss T—— 73 years of age, had from a very early period of life, (about her 8th year) been liable to occasional spasmodic attacks in the epigastric region, generally of short duration, and not of such a nature as to affect her health, which had been remarkably good, till within two years of her death. On examining the epigastric and right hypochondriac regions a large, prominent, hard, and moveable tumour was felt, but from which she experienced little or no inconvenience or distress.

In the course of the two last years of her life, she had two slight attacks of *hemiplegia* of the left side, and about four months previous to her death, she complained of much pain in the region of the stomach, accompanied with loss of appetite, and a sense of great oppression and distension after eating. These symptoms continuing to increase, her strength gradually gave way, and she died under considerable suffering, on the 28th of December 1829.

Morbid appearances.—The parietes of the abdomen having been divided, the omentum, where it lay over the stomach and arch of the colon, was observed to be much thickened, and on raising it, there were discovered two tumours of unequal magnitude, the one the size of an orange, the other about that of a hen's egg, attached to the margin and inferior surface of the liver. The gall-bladder, in a healthy state, was situated between them. On examining these tumours minutely, they were found to consist almost entirely of osseous walls, containing a quantity of thick gelatinous matter, and numerous hydatids of various sizes. The larger tumour was divided into two unequal cavities, which communicated freely with each other. The liver was diminished in size, but apparently sound in structure. The stomach was healthy. Posterior to the stomach, in the situation of the pancreas, there was a large mass of glandular disease. The other viscera appeared unchanged. In the course of the left broad ligament of the uterus, there was a vesicle of the size of an orange, full of limpid fluid, and a similar vesicle existed in the right broad ligament, but of smaller size.

14.—*Case of Biliary Calculus of great size.* By Dr Omond.

On the 17th August 1830, I found Mrs S. a married woman, 40 years of age, complaining of extreme tenderness of the abdomen, much increased by moving, with the general symptoms of fever, the pulse being full and strong, and the bowels confined. She stated that she had frequent attacks of inflammation of the bowels, the last being a few months ago; that constipation was always a prominent symptom; and that the remedies used were blood-letting and strong purgatives. She is of gross habit of body. After bleeding, a cathartic prescription was given, containing calomel and colocynth.

18th August.—The blood-letting partially relieved the pain of abdomen, which returned only at intervals. Various medicines have been tried, and all are speedily vomited. Several injections have also been administered, but without effect, not being retained for any time.

19th August.—Stercoraceous matter has been rejected by vomiting to-day, and the symptoms continue urgent as before.

9th September.—Since last report every medicine tried has completely failed, the stercoraceous matter being still rejected two or three times a-day. Strongly purgative enemata have failed to relieve the bowels. Mrs S. is much weaker, but still takes nourishment daily. The enema-syringe was now employed by the attending surgeons, instead of by a nurse as formerly, and very large quantities of fluid used, to the extent of several basins full. After the third attempt some feculent matter appeared.

15th September.—The pump has been daily used, and the vomiting has ceased. Yesterday a strong cathartic was given, containing seven grains of calomel, and to-day a calculus, about three inches in circumference, has been passed *per anum.*

10th October.—The patient is now able to walk about. She has passed several smaller calculi, and promises to improve gradually. The calculus consists of cholesterine, having the peculiar crystalline texture, and is in the Museum of the Royal College of Surgeons of Edinburgh.

15.—*Cases of Fatal Jaundice, with Delirium and Coma, in which the Bile Ducts appeared on dissection to be pervious and empty, with observations.* By Dr ALISON.

CASE 1. Peter Schread, aged about 25, a German sailor, was admitted into the Clinical Ward, 26th February 1826, in a state of complete delirium, with tendency to violence, but alternating with drowsiness. His skin and *tunica conjunctiva* of the eyes were of a bright yellow-colour; he had no tenderness of abdomen; his pulse was 60, of irregular frequency; tongue moist; extremities rather cold; he had occasional *singultus*; he passed a copious bilious stool and also urine in bed soon after admission.

His companion reported, that he had a severe attack of flux, in Java, in the summer previous,—that he had been in good health at Antwerp, from September till December, but that since 1st January, when he arrived at Leith, he had complained often of pain and heat in the abdomen, chiefly towards the right side, with thirst and chilliness,—that eight days before admission he had become jaundiced, and two days before admission had become delirious.

His head was shaved, bathed, and blistered, and he had one dose of calomel and several of tartar emetic, (the only medicines that could be got down,) which produced copious bilious stools, all passed in bed; but the delirium passed into complete coma, with dilated pupils and stertor; his pulse rose to 120, and became feeble; some purplish spots appeared on the skin, and he died on the evening of the 28th,—10 days after the appearance of jaundice.

The following account of the dissection was drawn up by Dr C. Henry of Manchester, who then assisted me as one of the Clinical Clerks.

" The skin and subjacent cellular tissue were universally of a bright yellow colour. This tinge extended also to the pericranium and to both surfaces of the *dura mater*, which was rather more vascular than natural. The other membranes of the brain were dry and glistening. The bloody points were somewhat more numerous than usual. There was very slight distension of the left lateral ventricle, the contained serum not exceeding half a drachm. That found in the right was still less considerable, and there was hardly any at the base of the brain, which appeared somewhat vascular. The consistency of the cerebral structure was perfectly healthy.

" The surfaces and central points of the cartilages of the ribs were tinged with bile, as were also the peritoneum and pleura. The liver, when incised, appeared of a light yellow colour, it was smaller than natural, its structure dense and resisting compression, but in mass it was remarkably large and flexible. The calibre of the cystic duct seemed to be in part obliterated; but the hepatic and common biliary ducts were quite pervious. Their mucous membrane was unnaturally white. The gall-bladder contained a greenish viscous semifluid matter. The spleen was somewhat firmer than natural. The pancreas was healthy. The contents of the intestinal canal were tinged, though slightly, by a greenish bile; those of the lower part of the ileum less than of the larger intestines. There was no vascularity of their lining membrane, but that of the great intestines appeared somewhat thicker than usual. The mucous coat of the bladder had acquired a deep yellow tinge, and contained urine of similar appearance."

CASE 2. Agnes Anderson, aged 35, was admitted into the Clinical Ward, on the 10th December 1830, with symptoms of jaundice (of a fortnight's standing), and occasional pain across the epigastrium, but little constitutional disturbance. She had recently suffered much mental distress, having been abandoned by a man with whom she had cohabited, and was in a state of agitation, and, being apprehensive of catching fever, she suddenly left the house the same day. After this, as we subsequently learnt, the pain at epigastrium increased; on the 14th she was observed to stagger in walking, and became drowsy and occasionally incoherent, without complaining of headach. On the 17th she was re-admitted, deeply jaundiced and perfectly comatose; her pulse was 118, soft; the surface rather cold; the respiration somewhat stertorous, but of natural frequency; the pupils somewhat dilated; the teeth firmly closed, and inclosing the apex of the tongue, which was bleeding. There was no rigidity of other muscles; she had occasional fits of hurried breathing and partial spasms, during which the pupils became quite immovable. Her bladder was much distended, and five pounds of deep yellow-coloured urine were drawn off by the catheter.

Blistering and enemata were tried without any effect. The breathing became more rapid and heaving, and the pulse feebler, and she died twenty-four hours after admission,—three weeks after the first appearance of jaundice.

The following report of the appearances on dissection was drawn up by Dr J. Reid, then Clinical Clerk.

" The skin had acquired a deeper tinge of yellow since death. Upon removing the skull-cap, the *dura mater* was observed to have also a yellowish tinge. The veins upon the surface of the brain were somewhat turgid. There was no effusion under the arachnoid or at the base of the brain; but a small quantity of yellowish serum was contained in the ventricle. Upon cutting the brain in thin longitudinal slices, every part of it appeared quite healthy, and nothing presented itself about which there was the slightest doubt, except the appearance of the choroid plexus, which was of a dark red colour, and a vein distended with blood was seen running along each of its portions situate in the lateral ventricles. Along with the red points which usually appear upon the cut surface of the brain, a little yellowish serum exuded.

" The liver was small, soft, and of a peculiar brownish yellow colour. The gall bladder *was collapsed* and *contained a small quantity of bile.* All the bile ducts were of the usual colour, at no point more dilated than another, perfectly pervious throughout, and almost completely empty of bile. It was doubtful whether the mucous membrane of the duodenum was very slightly thickened or not; but there was *certainly no decided change upon it.*"

Case 3. Communicated by Dr Christison. — Mary Hinchelwood, a stout servant girl, 19 years of age, was attacked about the beginning of April 1828 with constipation and yellowness of the skin. Fourteen days afterwards, when she first came under my care in the Infirmary, she had also somnolency, and dull pain in the pit of the stomach. The pulse was 96 and soft, the tongue and appetite natural, her thirst troublesome, the stools in general clay-coloured, yet at times a little bilious. On the day after admission, and repeatedly likewise before she entered the hospital, she was seized with violent diffuse pain in the pit of the stomach, receding as well as commencing abruptly, and attended with nausea, vomiting, and tenderness in the upper part of the belly.

The treatment pursued at first consisted in the administration of frequent laxatives, the occasional use of the warm bath, and a gentle course of mercury. But three days afterwards, as she was attacked with permanent tenderness in the upper part of the belly, while the pulse rose to 120 and the tongue became dry, I directed that blood should be taken from the arm. Eighteen ounces were accordingly drawn, with the effect of inducing faintness and removing the pain almost entirely. The blood had a natural crassamentum, but greenish serum.

In the course of the following night she passed for the first time very bilious stools, and for four days more her symptoms were most of them greatly mitigated,—the pulse falling gradually to the natural standard, the tongue becoming clean, the stools retaining their bilious character and being passed in natural quantity without laxatives, and her dulness and somnolency diminishing considerably. The yellowness of the countenance, however, continued all this time to increase steadily till it almost assumed the tint of black jaundice.

At the close of this period, namely on the eighth day of her residence in the hospital, the stools became again clay-coloured. On the tenth day the mercury began to affect the mouth. No amelioration, however, ensued; on the contrary, the yellowness of the skin became deeper than ever, and the somnolency increased.

On the eleventh her mind was much agitated by her being compelled to confess that she had syphilis; which, in the form of chancres, with swelling of the *labia*, had made considerable progress before she could make up her mind to inform me. This state of agitation continued more or less till the evening of the twelfth day, when she suddenly became delirious. At the hospital visiting hour next day I found her incapable of answering questions, and talking constantly and incoherently, with the eyes wide open, the pupils dilated, yet contractile, the pulse 130, small and sharp, and the tongue dry. She had likewise fulness, tension and tenderness of the whole belly.

No means had been resorted to in my absence for combating these formidable symptoms. I immediately prescribed venesection; but a few ounces only could be drawn. A great number of leeches were then placed on the head and belly; but only fifteen fastened. The patient in a few hours became comatose, and sank so rapidly that death ensued within twenty-four hours after the first appearance of delirium.

The body was examined forty-two hours after death.—Within the *Head* the only appearance of note was a uniform, lively scarlet blush of the whole arachnoid coat, produced by vessels too fine to be distinguished by the naked eye, but accompanied also with a minute net-work of visible scarlet vessels. Both in the external arachnoid and in the ventricles there was less serosity than usual.—In the *Chest* the only unusual appearance was yellowness of the serous membrane lining the parietes and viscera.—In the cavity of the abdomen there were above two pounds of serum rendered turbid with fibrinous flakes. The whole convex surface of the liver, as well as the adjacent diaphragm was lined with a thin coat of very yellow, brittle fibrin; and the concave surface of the liver was similarly affected in detached spots. The gall-bladder was healthy, and contained a few ounces of yellow, opaque, but thin bile. The ducts were *completely pervious,* not at all red, and free from unusual prominence of their rugæ. The intestines were healthy internally, —quite free from redness around and near the opening of the biliary ducts, as well as every where else. Even their external surface was not inflamed. The pancreas too was in its natural state. The internal substance of the liver was of the yellow colour peculiar to jaundice, but otherwise healthy in structure; and the inflammation was confined entirely to its peritoneal covering. In short, in the belly inflammation existed nowhere except in the peritoneal membrane which envelopes the liver and lines the adjoining diaphragm.

Case 4. James Carrick, aged 27, was engaged in a quarrel on Saturday evening the 9th of May 1835, and fell, or was thrown down a flight of steps, so that his back and left side came with considerable force against the edges of the steps. He was somewhat stunned, but walked home a quarter of a mile. On Monday the 11th he returned to his work, but was unable from indisposition to persist in it. On this day he observed his urine to be of a yellower colour than natural. On the 12th, according to his account, he vomited some dark bilious matter and also blood. On the 13th he had pain in the lower part of the epigastric region, and was bled and purged, with relief to his feelings. On the 15th he was admitted into the Clinical Ward, completely, though not very deeply jaundiced, and complaining of a gnawing pain in the part just mentioned, slightly aggravated by pressure, with frequent vomiting after taking food or drink. His pulse was about 80, rather small, but firm; his tongue white and moist, with thirst and anorexia; his bowels slow, the last stools reported to have been bilious; there was nothing unnatural to be felt in the hypochondria, nor any indication of more injury than slight bruises in the parts on which he had fallen. His aspect was languid and depressed.

He was bled to sixteen ounces, and took a dose of calomel and opium that night, and was purged by rhubarb and calomel next day, and again on the night of the 16th took two grains of calomel, with one of opium. After this he slept some hours, and wakened on the 17th in a state of high delirium, which continued all next day, and never afterwards entirely left him. At this time, he vomited much, and complained more of pain of abdomen and back, but not of his head. His pulse was sharp, and variable in frequency.

In these circumstances, I did not hesitate to express my belief that the case would end fatally, and that on examination after death the bile ducts would be found pervious and empty.

On account of this change of symptoms he was again bled to twelve ounces, had a purgative enema, and a blister to the head, and took eight grains of calomel with half a grain of opium that evening and next morning, followed by senna draughts, with tincture of jalap, which operated freely on the 18th, but the stools were without bile. After this he had smaller doses of the calomel and opium, again followed by the senna. The vomiting abated, he had some sleep, and on the 20th the report was more favourable than was expected. He had had four stools, greenish coloured, decidedly bilious; and the gums were slightly affected by the mercury. He was more sensible, though drowsy and confused. His pulse was now 96, of moderate strength, his tongue pretty clean and moist, he had had no vomiting for twenty-four hours, had taken some food and was rather less yellow. Unluckily there was inflammation around one of the punctures in the arm, to which ten leeches were applied. He took two powders of rhubarb and calomel that night and next morning, by which he had two stools; but these were again light coloured; the frequent vomiting returned, the yellowness and delirium again increased, and on the 21st his pulse had become very feeble. He had now wine, the calomel and opium were resumed, and a blister applied to the epigastrium; but neither the vomiting nor delirium abated; he became rapidly weaker, and died on the 22d,—the fourteenth day after receiving the injury, the twelfth after the first appearance of jaundice.

He never became quite comatose, but the fits of delirium all along alternated with drowsiness and slow breathing, approaching to stupor; his pupils appeared slightly dilated, but were contractile.

The following is the account of the dissection drawn up by Dr David Monro, then Clinical clerk.

" Some unnatural vascularity, (without effusion of lymph, but on a part which was considerably elevated in the position of the body after death,) was found on the outer surface of the small intestines, at the part where he had complained chiefly of pain and tenderness. The liver was small and hard, and on being cut into, showed the morbid structure termed *cirrhosis* considerably advanced. It was attached to the peritoneal surface of the diaphragm, to the stomach and duodenum, by many firm old adhesions; and in consequence of the parts being thus involved together, the *ductus communis choledochus* was cut in taking them out of the body, and it was impossible to be positively assured whether any obstruction existed in this duct or not. But both it and the *ductus hepaticus* were certainly *empty*, and gave no tinge of bile to the fingers of the gentleman engaged in the dissection; the hepatic duct was laid open in the transverse fissure, and some of its branches traced into the substance of the liver, but no bile was seen in them, and hardly a trace exuded from them when the liver was forcibly compressed.

" The cystic duct appeared to be impervious, and the gall-bladder was somewhat distended, but with mucus only, slightly tinged greenish. It contained also a considerable number of *calculi;* but none were found in any of the ducts.

" The ventricles of the brain were considerably distended by light yellowish serum, but there was no other morbid appearances within the head."

These cases are similar in the most essential particulars, and especially in the mode of death, to one recorded by Dr Cheyne, and two recorded by Dr Marsh, in the Dublin Hospital Reports, Vols. i. and iii.; to several quoted by Dr Marsh from Morgagni; and to one since recorded by Dr Abercrombie, (Pathology of the Abdominal Viscera, p. 373.) It is also known, that in those patients who become yellow in the course of fever, both in this and in tropical climates, the bile ducts on dissection have often been found pervious; and such patients very often die comatose. (See Cheyne, *ut supra.*) It is stated, for example, by Dr Gilkrist, in his " Exposé des Lesions Pathologiques," &c. where we have an account of the appearances of the liver as seen in many dissections after death by yellow fever at Gibraltar, that " no colouring matter was obtained from the liver by steeping, boiling, or pounding it, and no traces of bile were perceptible." (See Johnson's Journal for November 1830, Vol. xiv. p. 225.)

My reason for calling the attention of the Society to this form of jaundice is, that I do not think it has attracted the particular attention of any pathologist, since the important fact was ascertained, that when the secretion of *urine* is either suddenly suppressed in animals by the extirpation of the kidneys, or more partially obstructed in the human body by disease there, the urea appears in the blood; from which it has been generally and I think reasonably inferred, that the formation of the urea is always, at least so far, advanced in the blood itself, or in distant parts of the body; and that it is only *evolved* or separated from the blood at the kidneys.

It is generally agreed among physiologists that the peculiar matter of the bile is destined for excretion as exclusively as the urea; and it may be inferred, at least with great probability, that it will have a similar origin, and may be expected, in like manner, to appear in the blood, when its evolution at the liver is prevented.

When, therefore, as in the preceding cases, we see evidence of bile circulating in the blood, and find on dissection the liver small, neither loaded with blood, nor tinged, more than other parts of the body, with bile; the bile ducts pervious, and not only not turgid, but absolutely empty of bile, it seems to me the most reasonable supposition, that these are cases where the bile had not been secreted at the liver, and bear nearly the same relation to the more usual forms of jaundice, as the *ischuria renalis* to the retention of urine in the bladder.

I apprehend we have now sufficient evidence to establish two points;—1. The frequent occurrence of jaundice, in cases where the bile ducts are pervious, and appear empty after death; and 2. The *peculiar*, (I would not say either the *uniform* or the *exclusive*) tendency of such cases of jaundice, to produce delirium and coma, and prove rapidly fatal.

Without dwelling on the inadequacy of the explanation of the jaundice, in such cases, by the idea of spasm of the bile ducts, I shall only state the following facts, which seem to me strongly to favour the idea now stated, viz. that the jaundice in such cases depends on the retention in the blood, of the biliary matter, which in the natural state is separated only, not formed, at the liver, and which, when retained, acts on the nervous system nearly as a narcotic poison.

1. It appears from recent experiments, that cholesterine, which is readily obtained from bile, and which is spontaneously deposited from bile to form most of the biliary calculi, may be

obtained also by a process of no greater complexity, from the serum of healthy blood. (Boudet, Ann. de Chimie, 1833.)

2. Many cases on record, and indeed several preparations in the Museum of this University, show, that this ingredient of the bile may be deposited in very various parts of the body, even in persons who had not been jaundiced.

3. If the bile, or other secretions, were actually *formed* out of the blood in the organs where they appear, we might naturally expect to find, in the different tribes of animals, that similar secretions would appear in organs of similar structure, and that secretions differing widely from each other would appear in organs of widely different structure. But the reverse is the fact. It is stated strongly by Cuvier, that products differing the most widely in their nature from the blood, and from each other, are often found to be formed in glands of the greatest simplicity of structure, and *vice versa;* and this statement is amply confirmed by the recent elaborate and comprehensive investigations of Muller, whose general conclusion on this subject is as follows. "Quæcunque secretio in animalium orbe diversissimâ glandularum fabricâ paratur. * * * * Præterea diversissimæ secretiones simili interdum, imo sæpissime, glandularum fabrica fiunt. * * * * Itaque natura secretionis a sola diversa organica substantia ejusque virtute dependet, ex qua canales secernentes, aut cellulæ, formatæ sunt; quæque eadem permanere potest, in diversissima compositione et fabrica canalium; maximeque variare potest, ubi fabrica canalium discrepat minime."[*] This is easily understood if we suppose the glands to have only the power of separation, or chemical *filtration;* but such is hardly conceivable if we suppose the whole chemical changes necessary to the formation of the secretions to take place in the glands.

4. In the case of the excretions of the kidneys and lungs, it is now pretty generally agreed among physiologists, that the peculiar matters there evolved, at least in a certain degree elaborated, pre-exist in the blood which comes to these organs, so that the bile would probably be an *exception at least* to the other *excreted* fluids, if it did not pre-exist, at least so far prepared, in the blood which comes to the liver. But if it be true, as above stated, that the cases of jaundice, thus dependent on suppression of the secretion, and retention of the biliary matter in the blood, and also those, in which the nervous system is apt to be peculiarly and dangerously affected, another important inference may be drawn from these facts, viz. that the *retention* in the blood, by matter destined to excretion, is much more generally hurtful to the living body, than the *reabsorption* into the blood, of matters which have been ex-

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[*] De Glandularum secernentium penitiori structura, Lib. 15. § 7. 8. p. 122.

creted at their appropriate organs, but not thrown out of the body, in consequence of obstruction to their outlets. At first view, this appears improbable; but it is supported by the analogy of other facts; and if it be true, as stated by Dr Prout, that nothing is absorbed in the living body without having been previously acted on by the fluids of the body, and undergone a process more or less analogous to digestion, this difference between the noxious qualities of *excretions retained*, and *excretions reabsorbed*, may be easily understood. In support of this opinion of Dr Prout, various facts might be stated; and in particular, the surprising similarity in the contents of the lymphatic vessels, at different times, and in different parts of the body stated by Magendie as an argument against the commonly received opinion of the office of the lymphatics, must be held by those who believe that the lymphatics absorb, as a good reason for thinking that what they absorb is so far changed before entering them.

It will be observed, that, although I think we have evidence of the retained excretion being peculiarly noxious to the nervous system, as compared with the *re-absorbed* excretion, I do not assert that it is either uniformly or exclusively so. I am aware that there are cases of complete, or almost complete retention of urine, without the accession of coma; and Dr Abercrombie informs us, that he had a well-marked case of fatal coma supervening on the obstruction of urine in the ureters, where the secretion had been copious, and proceeding, therefore, probably from re-absorption of the urine. It is probable that there may be cases where the re-absorbed bile is likewise the cause of fatal coma; and when we reflect how very variously other narcotic poisons affect the nervous system in different individuals, it is not surprising that this difference should be observed. But that the *retained* bile has the peculiarly noxious quality, seems to me to be clearly shown by the very large proportion of cases of jaundice, early fatal in the way of coma, in which the bile ducts have been found pervious and empty.

In every point of view, and among others in reference to the proper practice in such cases, which are, I believe, so very generally fatal, these cases of jaundice, in which the poisonous qualities of the retained excretion show themselves so strongly in the functions of the nervous system, appear to be deserving of the special attention of pathologists.

16. *Abstract of Cases in which a portion of the cylinder of the Intestinal Canal, comprising all its coats, has been discharged by stool, without the continuity of the canal being destroyed.*

By Dr WILLIAM THOMSON.

IN proposing to lay before the Society a new example of a portion of the intestinal canal being discharged by stool, which occurred some years ago in the practice of Mr Cunningham of Tranent, and was communicated by him to my father, I was naturally led to inquire in what respects this case corresponds with or differs from other similar cases that have been put upon record. Having, with this view, made a collection of such cases, so far as the works in which they are recorded, were within my reach, I had the satisfaction to find that they constituted collectively a series of great interest—both as regards the symptoms that manifested themselves during life, and the morbid appearances found in those who died at a longer or shorter period after the discharge of the portion of bowel. As I am not aware that any attempt has been made in this country,* to bring these cases together, or to state the general conclusions to which they lead, respecting this singular example of the *vis conservatrix naturæ*, I trust an attempt of the kind may prove acceptable to the profession.

The cases which I have collected amount to thirty-five in number. Of these I have made a threefold division. The first series comprehends those in which the patients were alive at the time of their cases being published. Of these there are sixteen. We have not in some of them precise information as to the length of time that had elapsed from the discharge of the portion of bowel, but in all, with one exception, (case 17,) the interval had been long enough to establish the fact of the injury which the intestinal canal had sustained being at least temporarily repaired. In the second series, consisting of four cases, death had occurred previously to their publication, but unfortunately no dissection had been made. In the third series, which comprises fifteen cases, death had also occurred, but in these an examination of the state of the parts within the abdomen had taken place.

It is not necessary at the present day to enter into any explanation as to the manner in which the continuity of the intestinal canal is preserved, at the same time that a portion of its parietes, of their entire thickness, is discharged. Every one is now aware that to the accomplishment of these ends, three circumstances are essential; 1*st*, The invagination of a portion of intestine; 2*d*, The detachment, by disjunctive absorption, of the invaginated from the containing portion of intestine; and, 3*d*, Simultaneously with this disjunctive absorption, the effusion of coagulable lymph round the edges of living intestine from which the separation of the portion about to be discharged is going on, and such an advancement in the process of organization, in this lymph, as to give it sufficient firmness to resist the physical impulses to which it may be subjected, by the passage of alimentary matters through it or from other causes. In the cases of Invagination on record, in which death has occurred without any portion of bowel being discharged, and in which dissection has taken place, we may trace, step by step, the successive stages of this singular process, by which nature effects a cure in circumstances of so threatening a character.

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* In 1831, a thesis was published at Tubingen, under the presidency of my esteemed friend Dr H. F. Autenrieth, having the same objects as the following memoir. Of some of the cases narrated in that thesis, I have given a more circumstantial account, and I have added several to which no allusion is made in it, particularly cases in which a *post mortem* examination was made.

SERIES I. CASES in which death had not taken place at the period of their being recorded.

1. Joh. Pet. Albrecht de Intestinorum insigni per alvum excreta portione, superstite nihilominus manente aegroto. Ephemer. Med. Phys. German. Decur. iii. An. iii. Obs. cxxix. p. 227.
2. Dissertatio qua pars Intestini Jejuni per guttus inferius excreta, salva manente aegri vita, describitur, a J. Lembke et A. Westphal; Gryphiswald, 1741, in Halleri Diss. Med. Pract. iii. 503. (No. 97.)
3. Recherches Historiques sur la Gastrotomie, dans les cas du Volvulus, &c. par M. Hevin; Mem. de l'Acad. Roy. de Chirurgie, xi. (12mo edit.) Observation par M. Sobaux, p. 338.
4. Singular termination of a case of Enteritis, by Dr Thomas Sanden, Chichester. Annals of Medicine for 1801, p. 293.
5. History of the case of a man who discharged by the anus a portion of the Intestines full fourteen inches in length, by Mr John Bower of Doncaster. Annals of Medicine for 1802, p. 345. Preparation in the Anatomical Museum of the University of Edinburgh, I. 111.
6. Case of Intus-susceptio, which terminated favourably by the separation and discharge of the Cœcum, with a portion of the Colon and Mesocolon, by Mr J. M. Bowman, Ripon, Yorkshire. Edin. Med. and Surg. Journal, ix. 492.
7. Case of recovery after the separation and discharge by stool of a portion of the Ileum, by Alexander Renton, Surgeon, Pennicuik. Edin. Med. and Surg. Journal. xiii. 447, and xvi. 156.—Preparation in the Museum of the Royal College of Surgeons of Edinburgh.
8. Sur un Iléus terminé par l'expulsion naturelle d'une anse d'Intestin grêle de dix-huit pouces de long avec le mésentère correspondant, et par la guérison parfaite; par MM. Tuilier et Cruveilhier. Bulletins de la Faculté de Médecine de Paris, 1818. No. 9. T. vi. p. 207.
9. Case by M. Salgues. Journ. de Medecine, xxxvi. 515, vide etiam Diss. In. Med. de Dejectione Portionis Intestino-

rum per alvum, non semper mortifera, a Jos. Platz. Tubingen, 1831. P. 6.

10. Case occurring in the practice of Thomas Cunningham, Esq. Surgeon, Tranent; now first published. Preparation in the Museum of the Royal College of Surgeons of Edinburgh.

11. An account of a singular disease in the great Intestines, by Dr Baillie.—Med. and Chir. Trans. ii. 149.

12. Practical Observations on the Diseases of the Lower Intestines and Anus, by John Howship. P. 108.—Preparation in the Museum of the Royal College of Surgeons of Edinburgh.

13. Diss. sistens observationem Intestinorum partis intussusceptæ et salva vita per anum dejectæ a Hedinger, Berolini, 1828; vide etiam Platz. (No. 9. cit.) p. 21.

14. Case quoted by Platz, p. 20, from Legoupil, Journ. Gener. de Medecine, Oct. 1820. I have not been able to discover the case in any journal of that period.

15. Case of Intus-susception, with sloughing of a large portion of Intestine, voided by stool. By Levi Gaylord, M. D. of Sodus, New York. American Journal of Medical Sciences, February 1830. See also London Medical Gazette, vi. 176.

16. Clinical Illustrations of the more important Diseases of Bengal. By William Twining, Calcutta, 1832. Obs. xxii. p. 92.

Series II. Cases in which death had taken place at the time of their being recorded, but in which no dissection had been made.

17. Georgius Francus de Frankenau, de Intestini tenuis parte per anum exclusa. Ephemer. Med. Phys. German. Dec. iii. An. v. et vi. Obs. clxxvii. p. 409.

18. Sur un homme qui a rendu a plusieurs reprises des portions d'Intestins par les selles; par M. Salgues, Chirurgien a Sens. Journal de Médecine, Chirurgie, &c. viii. 266, (1758.)

19. Fall, wo eine frau noch neun wochen den abgang eines beträchtlichen Darmstucks überlebte, vom H. D. Höflich in Gräfenberg. Horn's Archiv fur Prakt. Med. und Klinik, ix. 278. (1801.)

20. An Account, &c. by Dr Baillie. Vide opus, No. 11. cit. p. 144.

Series III. Cases in which death had occurred, and a *post mortem* examination been made.

21. Sur un fait trés singulier par M. Majault.—Recueil

Periodique d'Observations (Journal) de Medecine, Chirurgie, &c. v. 427, (1756.)

22. History of a case of Ileus, in which a considerable portion of the Intestine was voided by stool, by Mr William Dougall, surgeon at Keith. Medical Commentaries, ix. 278.

23. Medizinische und Chirurgische Wahrnehmungen vom Prof. Schreger in Erlangen. Horn's Archiv. (vid. No. 19.) Gangraen des Darmkanals, p. 275.

24. Case by M. Mullot, in Bulletin des Sciences par la Société Philomathique, No. 46, iv. Année, Nivose An. ix. Vide etiam "Memoire sur une Terminaison particulière de la Gangrene dans les Hernies," by M. J. B. Cayol, in his translation of Scarpa on Hernia, p. 435.

25. Recherches Historiques, &c. par M. Hevin, (vid. No. 3.) Observation par M. Fauchon, p. 347.

26. Racconto di un fatto rarissimo, di considerevole porzione d'Intestino evacuato per secesso, anno 1805, Alessandria. Vide etiam Brizard, No. 30, citat. p. 7.

27. Remarks on Procidentiæ Ani, Intus-susceptio, &c. by Dr Alexander Monro, Primus, Phys. and Liter. Essays, ii. 353, and Works, p. 674. Case communicated by Dr Cullen.—Preparation in the Anatomical Museum of the University of Edinburgh.

28. Sur une portion d'Intestin entier dans tout son contour, de plus de quatorze pouces de longueur, rendue par le fondement, par M. Guerin. Journ. de Medocine, Chirurgie, &c. xxii. 552. (1765.)

29. Sopra una singolare dejezione d'Intestino, Memoria del Sig. Caldani; in Memorie di Matematica e di Fisica della Soc. Ital. &c. xvi. parte ii. 82.

30. Traité d'Anatomie Pathologique par J. F. Lobstein, i. 146. vide etiam Considerationes de Intestinorum Invaginatione, a Joan. Brizard; Argentorati, 1822, p. 9.

31. Case of recovery from intus-susception, where fifteen or eighteen inches of the Ileum separated, and were discharged per anum, by F. Bush, Esq. in Med. and Phys. Journal, l. 468. (Dec. 1823.)

32. Observations Anatomiques sur les suites etranges d'un Volvulus, par M. Boucher, Médécin. Mem. de Mathem. et de Phys. présentés a l'Acad. R. d. Sc. par divers Savans, &c. T. viii. p. 601.

33. Description of the Preparations contained in the Museum of St Bartholomew's Hospital, part ii. Fourteenth Series, p. 84.

34. Exceedingly rare case of Intus-susception, wherein up-

wards of a yard of Intestine was removed. Lancet, ix. 813, under head of "St Bartholomew's Hospital."

35. Osservationi di una Rottura singolare del tubo Intestinale con perdita di un pezzo d'intestino e successiva stabile unione della due extremita, in Memorie sopra alcuni pezzi Morbosi, conservati nel Gabinetto Patologico dell' Universita di Padova. Di F. L. Fanzago.

SERIES I. CASE 1. A soldier, aged 40, having been thrown down and trampled upon by an adversary, complained, for some weeks, of most excruciating pains in the abdomen, and frequently experienced, during that time, most obstinate constipation. These symptoms, along with continued efforts to vomit, gave reason to apprehend the supervention of iliac passion. The pains were not alleviated by the remedies employed, and the patient appeared in a desperate condition, when suddenly diarrhœa came on, and he passed large quantities of mucous matter mixed with blood and sanies. This was again succeeded by obstinate constipation, and he felt that some foreign body was lodged in the rectum, which, with his utmost exertions, he was unable to evacuate. At last, when straining at stool, he perceived a small portion of substance protruding from the rectum, and laying hold of it, he succeeded, with the aid of the natural efforts, in extracting it, a considerable quantity of blood and matter being discharged at the same time. On examination this substance was found to consist of a portion of intestinal tube, more than a span in length, both the extremities of which showed evident marks of inflammation and gangrene. A portion of omentum adhered to it externally. On the internal surface at one extremity, was found the valve of Bauhin (*valvula coli,*) showing the part of the canal from which this portion of intestine had been separated. For the first three days, nothing was passed from the bowels but some purulent matter; but on the fourth, natural dejections were obtained. The patient gradually recovered, and resumed his military service.

CASE 2. A man, aged 35, living chiefly on a milk and acid diet, had been affected for four years with hard tumours about the umbilicus, which increased in size every year, and were accompanied with pains and with swelling of the feet. He was seized with putrid malignant diarrhœa, of which he took little care. On the 28th January he was found suffering under oppression at the præcordia, eructations from the stomach, burning heat, and spasms of the left side. There was copious evacuation from his bowels, of a brown colour and very bad smell. These symptoms more than once abated under the treatment pursued, but returned again with increased severity, the diarrhœa and pains of the left side being very severe. On the 1st of March, he passed a portion of intestine, along with a quantity of thin matter of a brownish red colour, and putrid smell. At the end of four days, after having suffered excruciating pains, he voided shreds of intestine in a putrid state. After this the pains abated, and the belly always continued loose.

On examination of the discharged portion of intestine, the muscular coat was distinctly seen, with its circular fibres and intervening blood-vessels. On its inner surface, a number of *valvulæ conniventes* and of miliary glands were observable. A portion of mesentery adhered to its side.

Case 3. A man, whose age is not mentioned, was attacked some hours after supper, with violent vomiting, followed by fever, painful swelling in the epigastric and umbilical region, and obstinate constipation. These symptoms advanced; the matters which he vomited became fetid; he had shiverings, convulsive motions in all his limbs, and extreme debility, with continuance of the most excruciating pains in the abdomen. Some remedies prescribed the tenth day of the disease seemed, after two days, to produce an abatement of the symptoms, but the vomiting, though less frequent, was always accompanied with violent griping. When seen some days after this, his pulse was small and contracted; his room was infected with a cadaverous smell; his voice was nearly gone; he had cold sweatings, hiccup, and cold feet. Half an hour before each attack of vomiting, he was seized with the most violent pain in the umbilical region, accompanied by spasmodic constriction; but his eyes were lively, his countenance of good colour, he was in possession of his senses, and of good courage. Remedies were administered, which by the second day produced some black and fetid stools, and cessation of the vomiting, and on the third day caused an evacuation of an astonishing quantity of putrid matters. The patient felt better, but the vomiting and pains returned some days afterwards. The remedies being continued, on the next day the gripings were very violent; the patient seemed near his end, when being at stool he suddenly passed a large portion of solid matter, which proved to be a portion of colon, twenty-three inches in length, with the part of the meso-colon to which it was attached. He continued very emaciated for some time, but ultimately regained flesh and strength, so as to serve in the militia.

Case 4. A man, aged 23, of rather spare and thin habit, but extremely healthy, was seized on a sudden with violent pains in the bowels and sickness. On the evening of the fifth day, the pain was extreme, seated principally between the umbilicus and the pubes, but extending in some degree towards the right iliac region; the belly was tense, extremely tender to the touch, and hotter than the rest of the body. There had been no proper alvine evacuation from the time of the attack, but several times a large quantity of matter, not distinguishable from liquid feces, had been vomited. In the night between the eleventh and the twelfth day a very copious and effectual evacuation by stool took place. From this period all the symptoms appeared to subside. The vomiting became less frequent, and at length ceased altogether, and the soreness, tension, and heat of the belly abated. Watchfulness, restlessness, frequency of the pulse and thirst remained, till the seventeenth day, when the patient was well enough to be removed to a distance of two or three miles. On the eighteenth day he passed by stool a substance, which on careful examination was found to be a portion of small intestine, measuring in its whole length at least twelve inches. The separation had taken place very obliquely at one end, and somewhat obliquely at the other, so that in the part discharged, the intestinal tube was complete for the space of only about five inches. To this a portion of mesentery was attached. The discharged intestine was every where firm in its texture, and differed from its natural state only in being of a darker colour. The edges where the separation had taken place were ragged and irregular, and in some parts, to the length of an inch or two, were thickened into a whitish fleshy substance, of firm consistence. Within the intestine, a seed of an orange was found. The patient recovered, but no particulars are given respecting his subsequent state.

Case 5. A man, aged 40, over whose body the wheel of a stage-coach had passed, complained, when seen soon after the accident, of great pain in the abdomen, across which, between the navel and pubes, was the mark of the wheel. In the course of a fortnight he was able to walk about a little. He then complained of a weight at the navel. On the 17th day after the accident, in the evening, whilst sitting by the fire, he was seized with a feeling of general debility, which continued for ten minutes, and returned the next night. On the following morning he voided *per anum* full fourteen inches of his intestines, being apparently a portion of the ileum, with a part of the mesentery adhering to it; after which he had a lax stool, more in quantity than he had got quit of at one time since the accident. At the end of two or three weeks, a tumour appeared below the navel, which burst in a few weeks, and discharged a large quantity of yellowish matter, having a faint smell of feces. Subsequently three or four other small tumours appeared at different times and broke, leaving five orifices, two of which continued open several years afterwards, with constant discharge of yellowish or brownish matter, and frequent emission of fetid wind. This patient gradually recovered, so as to enjoy a tolerable state of health.

Case 6. A girl of 11 years, became affected with pain and sense of oppression in the bowels, with quick pulse, furred tongue, dry skin, and moderate thirst. On the 6th day hiccup and vomiting of feces occurred, the countenance was ghastly, the pulse quick and feeble, and there was every symptom of approaching dissolution. In the evening, a portion of the colon, cœcum, and mesocolon, measuring 13¾ inches, was passed by stool, with much black and fetid feculent matter, to the amount of six quarts,—this being the first proper alvine discharge from the commencement of the disease. Next day, the thirst was moderate, the skin moist, appetite returning, abdomen free from pain; and from this period the patient continued to recover gradually, and ultimately regained, to all appearance, perfectly good health.

Case 7. A man, aged 45 years, was suddenly seized, whilst at work, in the course of which he had been raising several heavy weights, with pyrosis and pain in the left hypochondrium, with a violent drawing in of the bowels, followed by a sensation as if some portion of them was squeezed and constricted. He procured a motion at this time, but without relief. Notwithstanding the free use of purgatives, it was not till the morning of the fourth day that the bowels were again moved, when nearly eight pints of dark-coloured bloody excrementitious matter were discharged by stool. He now felt much relieved,—the ease that followed the evacuation being almost as sudden as the pain in the commencement of the attack had been. He continued to improve till the morning of the fourteenth day after the discharge, when he became restless, and all the former symptoms recurred in their most aggravated form. In this state, he continued for three hours, racked with violent bearing down pain, and endeavouring, by straining, to expel something from the bowels that required all his efforts. From this distressed state he was as speedily freed by the discharge of a portion of the ileum nearly 18 inches in length, with a considerable portion of mesentery attached to it. He fell immediately into a profound sleep, and from that time gradually recovered so as to be able to resume his usual employment. At the end of three years, the digestive organs had completely recovered their natural functions, and the lankness of body under which he had laboured was entirely removed; and at the present period (12th August 1835,) after an interval of nineteen years, I am informed by Mr John Renton, surgeon, of Pennicuik, by whom the case was published, that he is still alive, and supports himself by his daily labour, having been for many years restored to his usual state of health and appearance. "He still resides," adds Mr Renton, "in the village of Roslin, where I attended him when he was ill."

Case 8. A man, aged 37, not subject to colic, diarrhœa, or constipation, was seized, without any known cause, with slight colic, which was easily subdued. On the 6th day, the colic recurred in a more severe form, but again yielded to treatment. On the 8th day, in consequence of an appearance of derangement of the stomach, an emetic was administered, which produced many attempts at vomiting, but little was ejected. On that evening the vomiting recurred spontaneously, continued the whole night, and was accompanied with hiccup. On the 9th day fecal matter was vomited, with some *ascarides lumbricoides*. The hiccup continued, the belly was in a state of meteorismus, and painful, particularly on pressure; he was sleepless and delirious, had no stools, and the urine was scanty and turbid. By enemata, a small quantity of blackish matters resembling decomposed blood was brought away. The symptoms continued the same till the 14th day, when being in the bath, he had copious spontaneous stools, with obvious relief; with diminution of the hiccup and vomiting, and of the abdominal tension and tenderness. The alvine evacuations were discharged in large quantity, and very fetid, with continued improvement in the patient's condition. On the twentieth day he passed at stool a portion of the small intestine, eighteen inches in length, with its corresponding portion of mesentery. On the following days there was a considerable dejection of matters resembling shreds of intestines, (*raclures de boyaux*,) with twitches in the bowels, which lasted only a few moments. These pains gradually diminished, concentrated themselves at a fixed point below the umbilicus, and appeared only during digestion, being the more severe the larger the quantity of food the patient had taken at a meal. By the 26th day after the discharge of the portion of bowel, he is described as having regained his appetite and strength, and as having an alvine evacuation only once in the twenty-four hours; the belly as being soft, and the pains during intestinal digestion as having almost entirely disappeared.

Case 9. A man, aged 24, was seized with severe vomiting and griping, so as to throw up every thing he took. When seen twelve hours after the commencement of his attack, his countenance was collapsed and flaccid, but there was no particular change observable in his eyes. There was no fever. An oil injection having been administered, a large evacuation took place, and the gripings and vomiting diminished. On the third day he was at work again in the fields; but three days afterwards he was attacked with vomiting more severe than before, and brought up several worms; the pains in the belly also again recurred. When the belly was examined it was found slightly tense and painful; and in the epigastric region and around the umbilicus, there was an oval swelling, larger and longer than a turkey's egg. The pulse was very small and feeble; but in two days it increased so much as to indicate venesection. Clysters having been administered, a large quantity of bilious matters was discharged, but the uneasy symptoms were not thereby lessened till about the thirteenth day, at which time also the vomiting recurred only every third or fourth day. On the twenty-third day, the vomiting seemed to have entirely ceased, the belly being only slightly inflamed, but the tumour continued painful. After an attack of indigestion, vomiting, tension, and inflation of the abdomen came on, accompanied with great difficulty in voiding urine; but at the end of four days, these symptoms subsided; the vomiting ceased, and the part occupied by the tumour was the only painful part, and even in it the pain was but slight. On the forty-first day, the whole cœcum with its appendix was discharged from the bowels in gangrenous fragments. The tumour disappeared, and the patient recovered completely from the disease.

CASE 10. Extract of letter from Mr Cunningham to Professor Thomson, 13th September 1824. " The accompanying preparation is a portion of intestine, apparently of the ileum, passed during life by a woman about 40 years of age, under my care. I have had frequent occasion to see this woman for several years past, on account of stomachic ailments and great torpor of the bowels. When called to her on the 16th May 1822, I found that she had been complaining for some days previously of retching and pain of the abdomen, accompanied with costiveness. At that time she felt a severe pain a little above the pubes, inclining to the left side. She could not bear pressure, had constant vomiting, and had had no stool for some days. Her pulse was rather full. I took from her twenty-five ounces of blood. Laxative glysters were administered, as well as a variety of laxative medicines. The bleeding was repeated on the 17th, and the laxative medicines continued. She was put into a warm bath, and fomentations applied to the abdomen. These measures, along with frequent injections of the infusion of tobacco, and blisters to the abdomen, were persevered in for eight days before a stool was obtained. After this the bowels were moved frequently, and on the third day, along with a natural and wonderfully easy stool, she passed the accompanying portion of intestine. Her recovery went on very favourably, although she was obliged to take more fatigue than was advisable in her situation. She was restricted to the use of a spare diet, and her bowels were kept open by castor oil. She continued, however, to suffer considerable pain in the former seat of her complaint, for more than a year. Since that time she has been much better than could have been expected; does the duty of her family, and now walks half a mile twice a-day. Her stools are irregular, frequently watery, never well-formed. Menstruation ceased for about ten months, but again returned. Her legs are a little œdematous." By a communication, dated 13th August 1835, with which I have been favoured by Mr Cunningham, I learn that this woman is still alive, after an interval of thirteen years —that she has ever since the date of his last communication respecting her enjoyed wonderful health,—and that, beyond an increased tendency to flatulence, she experiences no ailment or uneasiness.

Case 11.—"In Dr Hunter's collection of anatomical preparations," says Dr Baillie, "there is a substance very much resembling gut, which had been discharged during a violent purging, and which I have examined very lately with attention. It is about six inches in length, and is not so distinctly marked in its organization as that described in the foregoing case; (*vide* Case 20,) but upon attentively looking at it, there can be discerned some muscular fibres, the remains of the *appendiculæ epiploicæ*, and a part of one of the longitudinal bands, which are the circumstances characterizing the structure of the great intestines. Accompanying it there is a considerable portion of the inner membrane of the intestine, covered with a layer of coagulable lymph, which had been separated and discharged by stool. The person from whom this portion of gut passed away lived two years afterwards; but the particulars of his case have not come to my knowledge."

Case 12.—A young man, in February 1818, after labouring under all the severe symptoms of true ileus, with great danger to his life for eleven days, passed by stool a large mass of a solid substance, which proved to be a portion of intestine, partly inverted, measuring nearly thirty inches in length; after which the patient perfectly recovered.

Case 13. A woman, who in her 49th year, passed through typhus fever, was subsequently for several years subject to frequent attacks of spasmodic pains in the abdomen, particularly in the epigastric region, with vomiting or acid eructations and much flatulence. In her 56th year, she was suddenly, without any known cause, attacked with griping in the right hypochondriac region, which gradually extended, and at length occupied the whole epigastric region. The patient now felt as if a cord were tied firmly round the belly. Respiration was difficult, anxious and frequent, the severity of the pains impeding full inspiration. At the same time the whole tract of the intestines was in a state of violent motion, producing the feeling of balls of the size of the fist; but these, when pressed upon, moved about from place to place. The patient was found prostrate on the ground, suffering most excruciating pains, and beating the ground with her hands and feet. The whole body was of an icy coldness, and covered with a cold sweat. The hypochondriac region was very much constricted. Vomiting came on, by which the contents of the stomach, and afterwards a greenish yellow matter was ejected. Very severe and almost perpetual tenesmus supervened without any alvine evacuation. These symptoms continuing for three days, the patient seemed in imminent danger. The face was collapsed and covered with a cold clammy sweat. Respiration was very difficult; the pulse thread-like, beating 150 times in a minute; the voice weak and languid; and there was stercoraceous vomiting. The abdomen was drawn upwards from the left to the right side, and there was a tumour of the size of the fist in the epigastric region, which on the right side reached the iliac, and on the left, disappeared in the hypochondriac region. The rest of the abdomen was hollow. On the 7th day of the disease she passed by stool a part of the small intestine forty inches in length, and having a considerable portion of mesentery attached to it. There were obvious marks of inflammation, exudation, and sphacelus on the discharged portion of intestine. After this evacuation, the state of the patient was immediately improved. The abdomen was indeed somewhat painful on the following day, but admitted of being more forcibly pressed upon. The tumour in the epigastric region had disappeared. The patient recovered so speedily that on the fourteenth day from the commencement of the disease she was able to leave her bed.

CASE 14. A boy, aged 4½, affected with small-pox, discharged by stool the whole of the cœcum with its vermiform process, and likewise a part of the ileum, six inches, and a part of the colon four inches in length. In a short time he recovered his health.

CASE 15.—A boy, about 6 years, when first seen, was affected with symptoms not indicating a very severe attack; and a cathartic which was administered operated readily, and with apparent efficacy. On the following day he began to complain of pain in the bowels, attended with considerable fever, which continued with increasing severity for two or three days, until nausea, stercoraceous vomiting, and the usual symptoms of the most obstinate constipation, or intus-susception, distinctly manifested themselves. The acuteness of the pain, the intensity of the heat, together with the quickened pulse, reddened, shrivelled, dark-furred tongue, and great prostration of strength, left scarce a shadow of hope that the termination of the case could be favourable. In about four or five days, however, an evacuation was procured of a dark briny appearance, somewhat of an indigo tinge, which was followed by a speedy mitigation, and soon by an entire alleviation of all the alarming symptoms. This discharge was succeeded by one or two others rather copious, and exhibiting nearly the same appearances. The evacuations soon became natural, the bowels open and regular, the febrile symptoms disappeared, the tongue cleared, the appetite returned; in short, the whole system appeared with unwonted rapidity to resume its ordinary functions, and place the patient in a most favourable and convalescent state. In little more, however, than two days from the opening of the bowels his symptoms were materially worse, and a portion of the intestines protruded in two doublings or folds of several inches in length. Most of the intestine thrust out was in a state of incipient mortification; a part more advanced in the putrefying process; whilst other portions exhibited a nearly natural appearance. In about twenty-four hours the protruded portion of the bowels sloughed off; it measured twenty-three inches in length, exclusive of about three inches contained in a fold, which adhered too firmly to be detached or extended.

After the separation of the detached portion of the bowels, passages were procured, though with considerable pain and difficulty. The evacuations put on much the appearance of the fermenting wash in a distillery. Digestion was very imperfect; emaciation, to an extent but rarely witnessed, ensued; and the assimilating powers of nutrition were so feebly maintained as to threaten life. In this state the patient continued with little alteration for several weeks. At the end of that time the pain, which had been pretty constant, gradually became periodical, until it assumed all the regularity of parturient pains, an interval, varying from five to fifteen minutes, occurring between the successive paroxysms. The voice also was precisely of that kind which distinguishes such pains, uttering those cries which indicate the most piercing distress. Each paroxysm lasted about a minute and a-half, and was succeeded by an interval of perfect ease. On the return of each pain, the abdomen, which before was jejune and contracted, suddenly grew distended and inflated, discovering through its thin parietes every movement and tortuous winding of the intestinal tube, each portion of which seemed endeavouring to force its way through the thin integuments that enclosed it, and exhibited a tympanitic hardness and tenseness seldom witnessed in the most obstinate diseases of that kind, but which instantly and entirely subsided in exact ratio to the pain. After resisting, during some weeks, every means of treatment employed, this troublesome and distressing symptom subsided under a mercurial course. Health was gradually restored, and about two years after the period of the attack, the patient was a tolerably healthy lad, though more than ordinarily subject to attacks of colic and other bowel complaints.

Case 16.—A lad, aged 17, was seized three weeks after his arrival in India with dysentery. When seen on the evening of the fourth day he was suffering from pyrexia, pulse 110, belly hard, flat, and inelastic; the region of the cœcum tumid, hard, and painful on pressure; he had frequent scanty evacuations of a bloody water, passed with great agony. The evacuations assumed the appearance of a black watery fluid, with horrid odour of putrid blood. On the eighth day, the tension and fulness at the cœcum, and over the right side of the lower belly, were greatly increased; the stools became scanty, in fact nearly suppressed, and they had a reddish tinge; the patient was weak and irritable, apparently sinking. On the ninth day there was a horrid putrid odour from the body; he had been seventeen times at stool during the last night, but the evacuations were extremely scanty, and not improved in quality. Through this day he had no stool and seemed easier. The pulse fell to 116, and the belly was less tumid. Two enemata, each produced a moderate fluid evacuation; his belly was becoming softer. On the following night he had seven calls to stool, voiding altogether not more than a pint of brown fluid with slight tinge of blood and less fetid; exhalation from his body less offensive; belly softer. On the morning of the tenth day, a tube of small intestine, five inches long, and some fragments of equal length, were passed *per anum*, with some pus and bloody ichor; the tube appeared to consist of the whole of the coats of the small intestine inverted, and on its surface some sloughing ulcers were very distinct. On the second day after this occurrence, he was much better, had three fluid light brown stools, the belly was soft and flat, a slight fulness in the cœcum remained. He had passed some more small portions of intestine. The remaining hardness of cœcum gradually subsided, and he was able to go on board ship on the twenty-first day after the discharge of the first portion of bowel, still very weak and emaciated, but having a good appetite, which it was difficult to restrain.*

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* In enumerating the various appearances found on dissection in cases of Dysentery, Mr Twining says, in the work from which the above case is quoted, "The ulcerations within the great intestine are generally most numerous and most extensive at the cœcum and first portion of colon. The *valvula ileo-colica* has in some cases been found quite destroyed by ulceration, and the lower end of the ileum has formed an intus-susception into the cœcum, and becoming there strangulated has caused death. In a few more fortunate instances of intus-susception, when the lower portion of ileum descends into the cœcum, and forms a circumscribed tumour in that region, attended with suppression of stools and rapid pulse,—which prove the obstruction of the canal at that part,—the strangulated portion sloughs off, after adhesive union of adjacent parts has taken place, so as to maintain the continuity of the canal; and then stools are again passed, together with masses of slough, or entire portions of intestinal tube, and the patient slowly recovers. In eight years I can mention five cases of this sort, two of which have recovered."

In the "Catalogue of Preparations, &c. in the Museum of the Army Medical Department," I find the following entries: "Digestion, Div. iii. 53.—Portion of small intestine, about seven inches in length, voided *per anum*; the muscular fibres of the

Series II. Case 17.—A man, aged 26, laboured for about fourteen days under continual fever, obstinate obstruction of the belly, and severe colicky pains, thirst, &c. By what cause this illness had been induced was not known. The disease becoming daily more severe, some violent purgative was administered, which produced two copious and painful stools, with large and continued bilious vomitings. The hypercatharsis could not be restrained, and a few hours before his death, whilst suffering severe pain in the epigastrium, and passing copious bloody stools, he discharged a portion of the small intestine. Though he felt relieved at the instant, he soon after experienced a severe fainting fit, and died convulsed. The portion of intestine was a span in length, and had a portion of the mesentery annexed to it. From the presence and particular appearance of the *valvulæ conniventes*, it was supposed to be the portion of the jejunum which terminates in the ileum.

Case 18.—A lad of 15 years; when seen had for thirteen days been suffering intense pains in the abdomen, particularly round the umbilicus, and had vomited not only whatever he swallowed, but also stercoraceous matter. The abdomen was very tense and painful, particularly round the umbilicus; the fever was acute, and the patient inexpressibly restless, being unable to remain in any position. Proper treatment having been had recourse to, in the following night the vomiting ceased, the belly opened, the patient passed a quantity of very brown matter, of a fetid smell; the belly speedily collapsed, and the severe symptoms ceased. After this first evacuation, there came a second, in which he passed a portion of small intestine, twenty inches in length, gangrenous at its two extremities and in some parts of its parietes. On this portion of intestine being washed and air blown into it, the gangrene was found to have produced several small holes, through which the air escaped. The next day he again passed a portion six inches in length. After this he was unable to walk, unless in a semi-bent position, and suffered severe pain after meals, sometimes vomiting what he had taken. He neglected the rules of diet prescribed for him, and died of indigestion two months after his accident.

Case 19.—A woman, aged 30, eight weeks after delivery, was seized suddenly, after much exposure to cold, with most violent pains in the region of the *os sacrum*, which shifted

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gut distinctly visible. *Madras, presented by Mr Job, Surgeon 13th Light Dragoons.* From John Seary of that regiment, who perfectly recovered, and passed through the Invalid Depôt at Fort Pitt some years afterwards."

" Do. do. 99.—Portion of intestine passed *per anum*. *Madras*, presented by Dr Strachan, Inspector-General of Hospitals. From Thomas Rickmore, 13th Light Dragoons." Were these cases of Dysentery ?

to that of the stomach. In the evening she suddenly experienced an epileptic attack, which soon ceased, but recurred. The painful part round the stomach was much raised, whilst the rest of the parietes of the abdomen appeared spasmodically drawn in. On the second day, the pain in the region of the stomach continued, but extended farther around the umbilicus, and the belly was still drawn together. After wandering about between the abdomen and the *os sacrum*, the pain fixed itself on the third day in the region of the navel. The patient had occasional vomiting, when worms were discharged. The constipation continued, notwithstanding the employment of strong purgatives and clysters. On the 5th day, the abdomen was enormously swelled, the pulse small and contracted. In the evening there occurred smart purging, but this was not attended with any alleviation of the pain or diminution of the great swelling of the abdomen. Vomiting and hiccup occurred occasionally; on the eighth day the patient was much exhausted, and the intestinal canal so distended that externally one could very easily trace its convolutions. In the course of this night three stools were passed, with great alleviation of suffering and diminution of the abdomen. On the evening of the ninth day there were several very copious discharges from the bowels, which acted so beneficially, that by the tenth day the abdomen had completely subsided, and the pain had ceased. On the twelfth day, along with an evacuation, there was discharged a portion of intestine three-fourths of an ell in length, consisting partly of jejunum, and partly of ileum, coloured black on its inner surface, but otherwise uninjured throughout its whole length. A portion of omentum adhered to it. In a few days the patient was so far convalescent as to be able to rise and walk about her room. Symptoms of dropsy, however, soon manifested themselves, which increased by degrees, and cut her off at the end of the ninth week.

Case 20.—A woman, aged 50, of a spare habit, and very subject to costiveness, had twice in her life been attacked with vomiting, violent pain in her stomach and bowels, and obstinate constipation. The attack of the disease, which proved fatal, began with violent pain of the stomach and bowels, more especially on the left side, accompanied with vomiting and obstinate costiveness. Evacuations from the bowels were procured by purgative medicines of considerable power. These stools at first had a fetid offensive smell; but after some time consisted merely of blood, and were very numerous for many days,—on some days amounting at least to forty. The blood evacuated from the bowels became at length mixed with a kind of watery fluid, exceedingly offensive to the smell, and what seemed to be mucus.

About three weeks before her death, she voided a substance resembling gut, above a yard in length. For ten days before the passing of this substance, and always after that time till she died, she could have no evacuation from the bowels, unless she was held up nearly in an erect posture. During a great part of the time that the disease lasted, the disposition to vomit was so constant that she could hardly keep any thing upon her stomach; but at length this symptom very much subsided. Within fourteen days of her death, the pain in her stomach and bowels also diminished, except on the left side, where it remained unabated.

The portion of gut, on accurate examination, proved to be a part of the colon. The inner membrane was clearly distinguished, having very much the same appearance which it has commonly in that intestine, and the circular muscular fibres were traced with the most satisfactory degree of distinctness. In some places the peritoneal coat was preserved; in others, the *appendiculæ epiploicæ*, and a part of the longitudinal bands were distinctly to be seen.

Series III. Case 21.—A woman, aged 30, in the sixth or seventh month of pregnancy, was attacked with very violent colic, accompanied with fever, and vomiting of stercoraceous matter. Nothing was done for her till the eighth day, when she was found in a deplorable and desperate state. The same day, she passed by stool a portion of intestine, which Winslow on examination declared to be the cœcum and a part of the colon, with some portions of mesentery. The whole formed a packet extremely swelled by inflammation, black and gangrenous in several points, and particularly at the two extremities. The patient, who had continued up to that day to take solid food, passed by stool, during two or three days after the discharge of this portion of intestine, moulded excrements, surrounded by very fetid matters. She was brought to bed, on the twelfth day of her disease, of a still born and putrescent child. She sank on the fourteenth day.

On opening the body, the whole abdomen was found filled with purulent serum, in such quantity and so fetid, that the examiners had not the courage to prosecute their investigations.

Case 22. A woman, aged 67 years, naturally strong and healthy, but in very low circumstances, and much reduced by scarcity of provisions, was seized with violent colic or ileus. Nothing relieved the vomiting, pain, and constipation. By the sixth day, hiccup had come on, with every symptom of approaching death. Some stools were at this time procured. Several days afterwards, when the use of all medicines was given up, a looseness came on naturally, which continued four or five days, and relieved her of all threatening symptoms, excepting extreme debility. On the last day of this looseness, the seventeenth of her disease, she voided by stool a piece of the ileum, eighteen inches in length, along with its corresponding portion of mesentery. After this evacuation she became almost free from pain, but extremely weak, and lay continually in a supine posture, until a day or two before she expired, when she became very restless, and tossed much. She died on the thirty-sixth day from her first attack.

On dissection, many different parts of the intestines had a livid and almost gangrenous appearance, yet admitted of being blown up with air. A part of the ileum, about five or six inches, within a few inches of its termination in the colon, was found adhering so closely together as not to admit of separation. When the intestines were cut up, a very great constriction on the gut was discovered, where it appeared there had been an intus-susception of the part carried off, a division of the gut, and an union of the two divided ends by inflammatory adhesion. The stricture at the union was such as only to admit the passage of a little finger with difficulty.

Case 23. A woman, aged 48, subject from infancy to obstinate constipation, after stoppage of her bowels for five days, was seized (22d May) with the most violent pains in the abdomen and frequent vomiting. No relief could be obtained; the malady became more severe every day; she began to vomit feculent matter; the abdomen swelled immensely, became tense, and the pain was extreme. The right side from the hypochondrium to the groin was the hardest swelled and most painful, particularly in the latter situation. On the eleventh day (28th May) the whole of this surface began to assume a bluish red colour, and ultimately became blackish. About the thirtieth day (18th June) for the first time the bowels were again opened. A quantity of clayey excrement and mucus was discharged, and along with it a large portion of membranous substance, which on investigation proved to be a portion of intestine separated by gangrene. It was ten inches in length, preserved completely its cylindrical form, had a portion of mesentery attached to it, and was of a blackish gray colour. The patient survived twenty-nine days. (17th July.)

On dissection, the following appearances presented themselves. Almost the whole of the small intestines had coalesced along with the omentum into one mass. The situation of the transverse arch of the colon was very irregular, its middle part being so much pressed downwards and towards the right groin that it lay bent knuckle-formed upon the ileum, at the place where it enters the cœcum. This position of the colon, the author conceives, must have existed for a length of time, and might perhaps have been an original malformation, and the cause of the obstinate constipation from which the patient had so constantly suffered. But the most intense traces of disease were visible on this depressed part of the colon, and the fold of the ileum lying below it. The colon was destroyed by gangrene for five inches in length throughout half of its circumference. The borders of the gap thus produced had adhered to the inner surface of the parietes of the abdomen, behind the inguinal region, so that these parietes replaced the deficient half of the cylinder of the intestine. In this way the continuity of the colon was in some measure restored, and a kind of pouch or reservoir formed in the inguinal region, which opened into the cavity of the colon. But into this pouch the extremity of the mutilated ileum likewise opened. For of the ileum no more remained as far as the valve of the cœcum, and it was obvious that what had come away with the evacuation from the bowels was a part of this intestine, which had been disjoined by gangrene. The aperture of the ileo-colic valve was entirely closed up by the adhesion of its lips.

It would appear, therefore, that the only way in which the excrements could pass from the small intestines to the rectum, was by their passing in the first place from the extremity of the ileum into the pouch or reservoir, and out of it, without going through the cœcum and the ascending colon, straightway into the transverse colon.

Case 24. A woman, aged 56, was subject for a number of years to umbilical hernia, which had repeatedly produced unpleasant symptoms, and returned from the slightest causes, having been reduced more than a hundred times in the course of six years. On one occasion, the tumour was found larger than usual, and the patient affected with copious and frequent vomiting of feculent matters. The reduction could not be accomplished till after the application of poultices and embrocations for some hours. The symptoms continued, notwithstanding the return of the protruded parts, and on the following day the patient still discharged feces by the mouth as well as by stool. On the three following days the vomiting continued, but the matter vomited was only glairy. On the fifth day, the patient appearing more calm, was attacked with almost continual hiccup, sickness, and frequent syncope. On the eighth day, two gangrenous eschars formed about two fingers' breadth below the umbilicus, and a third upon the cicatrix of the navel. There was no stoppage of the alvine discharge, the patient going to stool daily. On the twelfth day the patient had a copious stool, in which was found a portion of intestine about fifteen or sixteen inches long, and accompanied throughout its whole length by a portion of mesentery almost unchanged. The patient continued to improve for about eighteen days, when she was attacked by a convulsive cough, accompanied with vomiting of glairy matter, which continued three days. An improvement again appeared, and continued about three weeks. Her appetite returned; solid food taken in moderate quantity passed readily; but liquids were almost always rejected by vomiting. During this period, the patient got out of bed, went twice into the open air, and felt very well. But on the sixtieth day of her disease, she had a return of the convulsive cough, with vomiting of mucus, which continued for three days. Having again become more calm, she was affected with frequent yawning, hiccup, and syncope, and at last died on the sixty-fifth day of her disease, and the forty-fourth after passing the portion of intestine by stool.

On dissection, the two extremities of the intestine were found completely united; they appeared to be each cut like the mouth of a flageolet, and accurately adjusted to one another in that direction. The point of union had contracted strong adhesions with the peritoneum, on the left side of the umbilicus, near the ring; nevertheless the cavity of the intestine was not sensibly contracted even at the place of the cicatrix. There was not the slightest trace of effusion of the contents of the bowels into the cavity of the abdomen. The portion separated belonged to the jejunum and ileum. The intestines were gangrenous at different points, at a considerable distance from the place of union. The liver was diseased.

Case 25. A man, aged 48, entered hospital, on account of a violent colic, with frequent vomiting of stercoraceous matter. On the twenty-fifth day of his disease, he passed by stool the whole cœcum, with six inches of the colon and as much of the ileum. This expulsion was preceded by a considerable discharge of very fetid matter. On the tenth day after this the patient walked home about 1000 paces, but he died on the night between the thirteenth and fourteenth day.

On opening the body, the cœcum was found to be wanting; the ileum terminated in the colon, with which it was very firmly united; when this latter intestine was opened, a tumour an inch in length, containing a yellowish fluid, was seen near its new embouchure. On the psoas muscle, a little below the right kidney, was observed an abscess, which communicated by a sinus with the place at which the union of the separated portions of intestine had occurred.

Case 26. A woman, aged 40, was seized with colic, bilious vomiting, and diarrhœa, the stools being mixed with clots of blood. After seven or eight days (27th June,) when at stool, she passed with much pain and uneasiness a solid body, which on examination proved to be a part of the colon and the cœcum with its vermiform appendicula. On being visited somewhat more than a month afterwards (2d August) it was found that she still experienced pains in the bottom of the belly, that there was a hard and circumscribed tumour in the left iliac region, and that her pulse was very weak and frequent. She stated that after the discharge of the portion of bowel, she continued to suffer pain as before, but afterwards regained her health so much as to engage in work, and fifteen days previously had gone some distance to help in grinding corn, in consequence of which exertion she had suffered a relapse. She died on the forty-third day after the discharge of the intestine. (8th August.)

On opening the abdomen, nothing particular was observed till the omentum was raised, when two apertures were seen in the colon, one of which received the ileum with a great part of the mesentery. The omentum performed the part of an outer coat, so that the feces, from this aperture of the colon to the rectum where it adhered, had not escaped into the cavity of the abdomen. The rectum appeared as if filled with feces, but on being cut up, the ileum and mesentery, for a Parisian foot, were found pushed into the colon as far as the rectum.

Case 27. A boy, aged 12, complained of wandering colic-pains, which he imputed to blows received on the belly from some of his companions. These pains returned frequently, with diarrhœa, and sometimes bloody stools, for nearly a year. At the end of that time, on being seen, he was much emaciated, had a quick pulse, and was so weak as to be confined to bed. Two weeks after this he passed at stool a livid membranous substance, tubular, and when distended with air, thirteen inches long, having the mesentery attached all along its concave side. Besides this large portion, there were several shreds and smaller pieces passed by the patient, notwithstanding which there were afterwards seen among his feces, skins of potatoes which he had eat after these parts of the intestine came away, so that they had not produced any discontinuity in the alimentary canal. The symptoms continuing, the boy died in six weeks.

On dissection, the folds of the intestines and omentum were all glued together by a fatty curdy matter. Within four inches of the valve of the colon, the ileum, formed into the usual curve by the mesentery, suddenly rose perpendicularly, and at that point it was much contracted, and had the appearance of a cicatrix. When the intestine was opened, this contracted part of it was found much thicker and harder than it was any where else, especially on one side, where it stood so far into the cavity as to leave a very small passage for the aliment. Along this contracted part the mesentery was firm and thick. After this the intestine became of a natural enough form.

Case 28. A woman, aged 31, was seized with violent colic after having been for eight days in a state of constipation. The colicky pain was seated between the umbilicus and sternum, and the patient experienced violent pain likewise in the region of the kidneys. As injections brought away only a small quantity of blackish and hard substances, and as she made fruitless efforts to vomit, an emetic was administered which brought on copious vomiting of bile and very fetid matter, in the course of which two round worms, each half a foot in length, were discharged; the vomiting was attended with temporary relief. After three doses of the emetic, the vomiting assumed a feculent character. From the fourth day the enemata employed began to detach a large quantity of matters, and it appeared that the intestinal canal had become free, but the pain between the umbilicus and sternum always remained. The injections continued to bring away copious dejections till the fifteenth day, when the patient experienced a natural call to stool, and discharged a portion of intestine at least 14 inches in length, and entire in its circumference. She felt much relieved, there remaining only a dull pain. She recovered so much that by the end of the second month she was able to work in the fields, and considered herself perfectly cured. Notwithstanding remonstrances, she indulged her appetite, which was voracious, and one evening, after having eat a large dinner, on going to stool and making an effort to evacuate the bowels, she experienced a pain in the kidneys, as if a knife had been plunged into her. From that moment the pain continually increased, and she died two days afterwards, in intense agony, having been delivered of a child, of from four to five months, two hours before her death.

On dissection, there was found effused into the abdomen a quantity of peas and beans, of which the meal above alluded to had consisted, and a large quantity of very fetid water. On separating the intestines, the middle part of the mesentery was found very black, and the two ends of the intestine, from which the portion passed by the patient two months before her death had been detached, were gangrenous and disjoined. The contents of the intestines could be pressed through these separated ends, and the fingers introduced through them into the intestinal tube. All the adjacent parts were gangrenous.

Case 29. A boy, 13½ years of age, was attacked with bilious colic. During the first four days, he suffered severe and incessant pains, but his pulse remained undisturbed. On the fifth day, fever came on, and continued with an interval of a day or two, to the thirteenth. At the commencement of the illness, there was frequent and copious vomiting, and the belly was hard and constipated. On the fourth, the belly was opened, and the vomiting ceased, after a great quantity of yellowish matters and a number of worms had been discharged both upwards and downwards. These evacuations on each occasion brought relief, but the pains and swelling of the belly did not cease till the fourteenth. On the sixteenth, without any suffering, he passed a substance, which on examination was found to be a portion of the small intestines; and from its numerous valvulæ it was concluded to be a portion of the jejunum. The boy regained his strength, flesh, and colour, so as to be able to work every day with his father, a tailor by profession. One day, about two months after the discharge of the portion of bowel, he was suddenly seized while at work, about five o'clock in the evening, with pains, borborygmi, and most violent vomiting, and died about midnight.

On dissection, the abdomen was found distended with air, and containing a small quantity of watery fluid mixed with some portions of feces. A number of livid spots were scattered over the omentum. A portion of the ileum was detached from its mesentery, and there existed in it an aperture two inches in length, from which the watery fluid and feces had escaped. The fold of intestine in which the aperture was observed, appeared at one part very thin, and much dilated, so as to form a sac, and might have been supposed to consist of the external coat of the intestine alone.

The unexpected death was attributed to the kind of diet of which the boy was obliged to make use, consisting of polenta and beans, and of which on the last day of his life he had eaten to great excess. The gas produced by his food, it was conceived, by gradually dilating the pseudo-membranous sac which had united the two extremities of the separated portion of bowel, had finally produced its rupture.

Case 30. A woman, aged 30, was seized without any known cause, with all the symptoms of *ileus*. For fifteen days she suffered excruciating pains, at the end of which time she had a copious evacuation from the bowels. A portion of intestine was found in the feces, and the woman soon after recovered her health, and returned to her usual country labours. The portion of intestine proved on examination to be a part of the ileum with the adhering mesentery, three feet in length, of a black colour, but not affected with sphacelus. Its structure was not changed; its parietes were tolerably firm; but the villous coat, the blackest of all, seemed to be corroded in many places, so as to bring the cellular texture placed between it and the muscular coat conspicuously into sight. The extremities of the portion discharged were torn very obliquely; and consequently the cavity of the intestine could be easily inspected without making any cut into it. The intestine might easily have been distended with air, if there had not existed in it a single fissure six lines in length. The mesentery was of a white colour. More than three months after the discharge of the portion of intestine, this woman was again seized with the same symptoms, in consequence, as was conceived, of indigestion, and died in a few hours.

On dissection, the small intestine was found torn across towards the left umbilical region. Feces, with the stones and stalks of cherries, had escaped into the cavity of the abdomen. The rupture was in the ileum. A little above it, the diameter of the intestine was three inches and two lines, and the parietes were three-fourths of a line in thickness. The upper portion of the intestine was cut up longitudinally for thirteen inches, and on attentive examination of its torn extremity, there were observed, 1*st*, preternatural adhesions of the mesentery to that extremity; 2*d*, a ring where it was thought the portion of intestine expelled by stool had been separated from the rest of the intestinal tube; 3*d*, shreds of membranes produced by the last fatal rupture. The inferior portion of the intestinal tube having been cut up to the extent of fifteen inches, to a point near the cœcum, was found to differ from the upper portion in its coats being thinner and its parietes more flaccid. Its upper extremity, and the mode of its union with the upper portion, were particularly deserving of attention, exhibiting a mouth of an irregular form, and rough with shreds of membranes, but no thick ring.

Although in this case, observes the narrator, the two extremities of the intestine, which by their junction had preserved the continuity of the intestinal tube, were found after death separated from one another, yet we may easily conceive the state of parts previous to the last rupture. The parietes of the intestine, as has been said, were much thickened near the place of rupture, whence we may conclude that the intestine was contracted at that part, seeing that thickening or hypertrophy is never found in these organs combined with dilatation. If this were the case in the present instance, the cause of the last rupture is to be found in the large quantity of food taken by the patient. Where the ring was observed, the tube was most narrowed; in that place probably the separation of the portion of intestine, which was seized with gangrene and expelled by stool, took place. The ruptured extremities had been joined by a ring, from which the lower and less adherent portion had been torn off by the motions produced by the food in its passage through the alimentary canal.

Case 31. A lad, aged 12, was attacked with pain in the umbilical region. When seen on the second day he was affected with sickness, vomiting, severe pain extending over the abdomen, a dry brown tongue; the skin was extremely hot, and the pulse corded, hard and small, making 120 beats in the minute. On the fourth day, when he appeared much exhausted, and his death was expected, a considerable quantity of feculent matters, mixed with blood, was discharged *per anum*. From this time the bowels were easily acted on by the mildest laxatives, the sickness left him, the pulse became less frequent, and his pain inconsiderable. On the eighth day a portion of bowel was voided with a common alvine evacuation. It was fifteen or eighteen inches long, and proved to be a part of the ileum. From this time his convalescence was regular and rapid; but he complained of pain in attempting to assume an erect position, and was obliged to keep himself bent forward for three or four weeks, at which time he had regained his health; the bowels being regular but rather relaxed.

About twelve weeks after his complete recovery, he was attacked with typhus fever, of which he died a fortnight after the seizure.

On dissection the traces of the diseased bowel were visible by a considerable puckering and contraction where the slough had taken place, and the parts had united; yet there did appear sufficient room for the feces to pass, and but for the febrile attack he might have enjoyed ordinary health.

Case 32.—A woman, aged 60, was attacked with inflammatory colic, which appeared to yield to the remedies employed. The laxatives administered operated gently. On going to stool some days afterwards, she felt a longish body passing out of the rectum, which she believed to be a portion of tape-worm. Alarm having been excited, a surgeon was called, who, finding that this substance did not come away when gently pulled, cut it through near the anus. The portion thus removed was about a quarter of a French ell in length. The same night a second portion was expelled by the natural efforts.

Previous to this occurrence, the patient had appeared to be in a state of convalescence, and it did not seem to be followed by any injurious consequence. She no longer suffered any pains in the abdomen, and no symptom remained beyond slight tenderness in the middle of the umbilical region, when she bent her body forwards. The functions of the abdomen were performed with tolerable regularity. It was easy to move it by emollient injections when tardy, or to quiet by some anodyne draught the slight colicky pains, which occasionally returned.

The appetite of the patient being keen, she did not comply with the regulations respecting diet enjoined by her attendants. Somewhat more than two months before her death, she had a rather violent attack of indigestion, brought on by the kind of food she used, which lasted several days; and it was of a similar attack that she ultimately died,—an interval of nearly five months having elapsed between the commencement of her illness and the day of her death. A few hours before her death, she felt in the belly a motion accompanied by a slight noise, as if some body had fallen from the umbilical region into the lower part of the abdomen.

The first portion of intestine that was discharged formed a cylindrical tube, uneven at one of its extremities; but entire and without solution of continuity in its circumference. It was livid and even blackish at some parts. On being opened the *valvulæ conniventes* were evident, shewing it to be a part of the jejunum, though more dilated than that portion of the small intestine usually is. The second portion was somewhat longer, and had a piece of mesentery attached to it. On its internal surface, the *valvulæ conniventes* were still more conspicuous than in the first portion.

On inspection of the body after death, the omentum was found in a state of inflammation, firmer in its consistence than natural, and very thick throughout its whole extent. In the cavity of the abdomen, particularly in the pelvis, there was a considerable effusion of gray-coloured matter of purulent appearance. On raising the omentum, several short membranous bands were observed on the surface of the jejunum, one three fingers-breadth in length, attached by both ends to points of that intestine at the distance of several hands-breadth from one another, the others attached by one extremity only. About the middle of the umbilical region, and a little to the right side, was found an interruption in the intestinal canal. The upper portion terminated in a cone, the point of which was very narrow; whilst the extremity of the lower portion had the form of a round *cul-de-sac*. The space between these two portions was only a few lines in length. This division of the intestinal canal was not continued into the corresponding part of the mesentery which appeared in its natural state. All that part of the canal situated above the point of interruption, comprehending the largest portion of the jejunum, was considerably dilated, whilst the lower part of the small intestines, comprising the ileum, was reduced to a third of its diameter, throughout the most part of its extent.

The conical extremity of the upper portion of intestine was hollow and perforated at its point, by an irregular fringed aperture, through which air, blown into the intestine, passed into the abdomen. Within the lower portion there was found an intus-suscepted piece of intestine, five finger-breadths in length, inverted, and adhering throughout almost its whole length to the internal surface of the containing portion of intestine, along the line of the attachment of the latter to the mesentery. The cavity of this inverted portion was obliterated; and the great number of *valvulae conniventes*, crowded together upon its surface, seemed to show that it had been originally of considerably greater length than its present puckered and contracted condition indicated. It terminated inferiorly in a kind of nipple, obviously a cicatrix resulting from the separation of an adjacent part. At the root of its attachment to the fold of intestine within which it was contained, was perceived the opening of a canal, which, permeating the containing fold, terminated at a membranous groove that lay on the part of the mesentery corresponding to the space between the two ends of the divided intestine. This groove, which was about six lines in extent, seemed to be the continuation of the conical extremity of the upper portion. Loose shreds of membrane were observed along its borders, and every thing seemed to prove that this furrow had formed part of a canal of communication between the two ends of the divided intestine, which had been torn through in consequence of its insufficiency for giving passage to the large quantity of alimentary matters which reached this portion of the canal, and of the thinness of its parietes.

Case 33.—" No. 63. Portion of small intestine, to the extent of nearly three feet, which was discharged in a gangrenous state from the anus. It is presumed that there had been an intus-susception of this portion of intestine.

" No. 64. The cœcum and a portion of the ileum connected with it, from the same individual as the preceding specimen. The cœcum is opened to show the condition of its mucous membrane, which is extensively ulcerated. Portions of it hang in shreds in the cavity of the intestine. The ileum is opened to show the adhesion of its extremity to the cœcum, and there is a continuity of surface between the inner membrane of the ileum and of the cœcum.

" In the individual from whom the two preceding specimens were taken, a large portion of the ileum having been discharged in a gangrenous state, the remaining part of it has become adherent to the cœcum. In this way the continuity of the intestine is preserved." *

Case 34.—A woman, about the middle period of life, had been for some time labouring under a constipation of the bowels. Her medical attendant, on the second day of his visiting her, had his attention directed to a slight protrusion which had taken place *per anum*. From the appearance which it presented on a superficial examination, he was induced to think it was a portion of the rectum, and as no particular swelling of the parts had as yet supervened, the tumour was readily returned.

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* Is this the case of which there is the following notice in Mr Abernethy's Lectures? (Lancet, xi. 565.) " There was a woman in this Hospital in whom the intus-suscepted portion perished and came away, and yet she had natural stools afterwards ; but she died."

The constipation, however, continued, and within a day or two she was seized with severe symptoms of peritoneal inflammation; there was pain over the abdomen, accompanied with a continual state of nausea and sickness, so that every kind of nourishment that was taken was instantly rejected. About this time the protrusion recurred, and to a greater extent than at the former period. This induced the surgeon more minutely to examine the condition of the parts, for which purpose he very gently withdrew a small portion, and finding it yield very readily, he continued in this manner gradually to withdraw the gut, until one yard and three inches of intestine were brought away. The violent and distressing symptoms which had previously harassed the patient now in a great measure subsided; still, however, pain was complained of in the abdominal region, and there was an occasional recurrence of nausea and sickness. A dose of castor oil having been given the bowels acted for the first time since the commencement of the attack. The evacuation presented the appearance of a natural and healthy secretion. In a very short time the nausea and sickness subsided. The patient went on progressively improving to the eighth day, at which time the bowels had acted three or four times, and the general state of the patient was such as to induce a favourable prognosis of the case to be given. But at the moment when the patient appeared to be going on favourably, life ceased.

On examination of the body, it was found that the detached intestine was a portion of the ileum, which had become intussuscepted within the colon. An inflammatory action had taken place about the *caput coli*, which had occasioned a secretion of coagulable lymph, thus completely agglutinating the two portions of intestine together, and from this agglutinated part had the separated portion of intestine been detached. The ileo-colic valve was entire. The mucous coat of the transverse arch of the colon was found to be in an inflamed state, and in two or three places small ulcerated spots were discoverable. The peritoneum was also inflamed, but not in a very remarkable degree. On the portion of gut which had been removed, the *valvulæ conniventes* were very apparent, being more numerous towards that portion which was nearer the jejunum.

Case 35.—A man, aged 40, strong, well-formed, and plethoric, complained (30th May) of pain in the left inguinal region of the abdomen, which increased every hour, and was accompanied by such severe constriction in the præcordial region, as scarcely allowed the patient to breathe. These symptoms were accompanied by obstinate constipation with continual efforts to vomit, the patient bringing up not only the food which he had recently taken, but also feculent matter. The patient had the day before eat a large quantity of raw peas, and drank a large allowance of strong wine. On the third day of the disease the nausea and vomiting continued, and the patient was very restless. On the fourth the vomiting was less frequent, but the pains very severe. Up to the seventh day, the pains and tension of the belly constantly increased, and no evacuation took place. At that time the pains suddenly ceased, and the patient appeared in the greatest danger. The meteorismus and other symptoms of the disease continued till the fourteenth day. Soon after the administration of a quantity of quicksilver, a portion of it was discharged by stool with a quantity of feculent matter, and at the same time a piece of the intestinal canal, bearing marks of sphacelus, and two spans in length, was discharged. On this the patient improved remarkably, and at length almost entirely recovered his health; but after an interval of two years and two months, he was attacked with *synocha maligna verminosa*, of which he died on the ninth day.

On examining the body after death, it was found that the discharged portion of the bowel had been separated from the ileum, the extremity of which had united with the cœcum.

After this detail of individual cases, I shall now endeavour to state shortly some of the more general conclusions which seem deducible from them.

1. *Influence of Sex on frequency of occurrence and on mortality.*—Of the 35 cases above described, there is only one (33) in which the sex of the patient is not mentioned. Of the remaining 34, there occurred in males, 20, in females, 14. Of the 20 males, 13 are included in the first series, (1, 2, 3, 4, 5, 7, 8, 9, 11, 12, 14, 15, 16,) and 7 in the second and third, (17, 18, 25, 27, 29, 31, 35.) Of the 14 females, 3 are included in the first series, (6, 10, 13,) and 11 in the second and third, (19, 20, 21, 22, 23, 24, 26, 28, 30, 32, 34.) From this statement it is obvious that, in respect of frequency of occurrence, the proportion has been greater among males; but in respect of mortality, it has been greater among females.

2. *Influence of Age on frequency of occurrence and on mortality.*—There are five cases in which the age is not marked, (3, 11, 12, 33, 34.) In one of these, however, (12,) the patient is said to have been young, and in another (34,) of middle age. Of the remaining 30 cases, 7 were under fifteen years of age, (6, 14, 15, 18, 27, 29, 31;) 7 between sixteen and thirty, (4, 9, 16, 17, 19, 21, 30;) 12 between thirty-one and fifty, (1, 2, 5, 7, 8, 10, 20, 23, 25, 26, 28, 35;) and 4 above fifty, (13, 22, 24, 32,) so that the number under thirty years of age was 14; and the number above that age 16. Of the 14 cases under thirty years, 6 belong to the first series, and 8 to the second and third. Of the 16 cases above thirty, 7 belong to the first series,

and 9 to the second and third. The proportion of mortality, therefore, does not seem to have been much influenced by age.

3. *Relations of Age and Sex, in respect of frequency of occurrence.*—Of the 14 cases under thirty years of age, the patients in 10 were males, and in 4 females. Of the 16 cases above thirty, 7 were males, and 9 females. The proportion of males, therefore, was larger under thirty, that of females larger above that age.

4. *Portion of intestine discharged.*—In three of the 35 cases, no opinion is expressed as to the part of the intestinal canal from which the discharged portion had been detached (12, 15, 28.) Of the remaining 32 cases, it seems in 22 to have consisted exclusively of small intestine; in 3 partly of small and partly of large intestine, and in the remaining 7 of large intestine alone. Of the 22 cases in which the discharged portion of bowel consisted exclusively of small intestine, in 3 it seemed to be a portion of the jejunum, (2, 29, 32,) in 3 to be derived partly from the jejunum and partly from the ileum, (17, 19, 24,) in 11, wholly from the ileum, (5, 7, 10, 22, 23, 27, 30, 31, 33, 34, 35) and in 5 the particular portion of small intestine from which it had been separated is not marked (4, 8, 13, 16, 18.) Of the 3 cases in which the intestinal *sequestrum* (if I may be allowed the expression) consisted partly of small and partly of large intestine, in one it was constituted by the lower extremity of the ileum and the cœcum (1,) in the others, by the same parts with the addition of a portion of colon (14, 25.) Of the 7 cases in which it consisted wholly of large intestine, in 1 the cœcum, (9,) in 3 the cœcum with a portion of colon, (6, 21, 26,) in 2 a portion of colon (3, 20,) constituted the sequestrum, and in one the particular part of the large intestine is not marked (11.)

5. *Length of the discharged portion of intestine, and other circumstances relative to it.*—In respect of length, there seems to have been every variety from six to forty inches, and there does not appear to have been any relation between the length of the discharged portion and the part of the canal from which it came. In almost all the cases the intestinal sequestrum came away in a single piece. In one case (9) it is said to have been discharged in fragments. In another case (16) there were two portions of unequal length, the first measuring twenty, and the second six inches, discharged at the interval of a day. In a few cases, (8, 16, 25,) it is said that subsequently to the discharge of the principal portion, shreds of intestine, or something resembling them, were discharged. In almost all the cases it is mentioned that a piece of mesentery or mesocolon was attached to the discharged portion of intestine; in one (7) a mesenteric gland can be seen in the preparation; and in a few a piece of omentum seems to have adhered to it. Though an invaginated

portion of intestine necessarily consists of at least two plies, there are only two cases in which it is mentioned that the discharged portion was in any degree double. In one of these (12) it exhibited marks of partial inversion. In the other (16) it is stated to have been inverted. In all the others it would appear that the duplicature was undone, during the passage of the portion of bowel through the intestinal tube.

6. *Symptoms manifesting themselves previously to the discharge of the portion of bowel.*—In most of the cases the symptoms were those of ileus, but in two, at least, of diarrhœa, (2, 26,) and in one of dysentery (16.) In a large proportion of them vomiting occurred, and in more than a third of these it is mentioned that the matters ejected from the stomach were at some period of the disease stercoraceous, (3, 4, 6, 8, 13, 15, 18, 21, 23, 24, 28, 35.) In several cases worms were brought up by vomiting; in some of these it is mentioned that the vomiting was at the same time stercoraceous, (8, 28,) whilst in others (9, 19, 29,) no allusion is made to the matters vomited having been of this nature.

In the cases in which the symptoms assumed the character of ileus, there occurred, in the first place, a state of constipation, which varied considerably in its duration. In most of these cases the bowels became open a longer or shorter time previously to the discharge of the separated portion of intestine. In some instances, however, it would appear that the bowels continued constipated till the portion of intestine was discharged (5, 6, 23.) In the cases in which the symptoms were those of diarrhœa, no period of constipation is stated to have occurred during the progress of the disease. In the case of dysentery, it is mentioned that the stools became scanty, in fact *nearly* suppressed. In these cases are we to conceive that the alimentary canal remained sufficiently open at the point of intus-susception to allow of the propulsion of its contents through it; or that the dejections consisted of matters previously contained in the portion of the intestinal tube beneath the seat of the invagination, or subsequently secreted from its inner surface?

The matters discharged during that open state of the bowels which in most instances preceded the discharge of the separated portion of intestine, seem to have varied much in their character, according to the proportions in which proper excrementitious matters, mucus, sanies, and blood, were mixed together. In some cases it does not appear that any discharge of blood was noticed, whilst in others pure blood was passed in considerable quantity (17, 20.) There is no mention made, in any of the cases, of constipation having recurred after the bowels had become loose, with one exception (Case 1) in which the separated portion of intestine seems to have acted as a plug.

7. *Causes of the illness during which the portion of bowe was discharged.*—In many, or rather most of the cases, no cause could be assigned. In some the affection succeeded to external injury, (1, 5, 8? 27;) in one to the employment of a considerable degree of force in the reduction of an umbilical hernia (24.) In a few cases it is mentioned that the patient had been of a costive habit; and in a few a prejudicial influence is ascribed to the kind of diet.

8. *Interval elapsing between the commencement of the illness and the discharge of the portion of bowel.*—There does not appear to have been any general correspondence, in the different cases, in respect to the length of this interval. In one case, the discharge of the portion of bowel occurred on the sixth day of the illness (6;) in four, on the seventh or eighth (13, 21, 26, 31.) In considerably the greater proportion of cases it occurred within thirty days. In one, the interval is said to have extended to more than a month (2;) in another, to have been of forty days' duration (9;) and in one case, (27,) in which the illness was attributed to external violence, more than a year intervened between the reception of the injury and the discharge of the portion of bowel.

9. *Interval, in those cases which proved fatal, between the discharge of the portion of bowel and the occurrence of death.* —This interval, also, was very various in its duration. In one case, it extended to only a few hours (17;) in another, to six days (21;) in other single cases to thirteen, nineteen, twenty-one, and twenty-nine days; in a considerable portion to from six weeks to two months (18, 19, 24, 26, 27, 28, 29;) and in some to from three to five months (30, 31, 32.)

10. *Causes of death in the cases which had a fatal issue.*—In some of these cases the occurrence of death seems to have been dependent upon or connected with the injury sustained by the intestinal canal, or the inflammatory affection by which this injury was itself produced. In others, the fatal issue seems to have been occasioned by changes occurring in the intestinal canal, after a more or less complete natural cure had taken place; whilst in a few it was attributable to a cause nowise connected, to all appearance, with the injury which the intestinal canal had sustained.

The cases in which death seemed to be attributable to changes taking place in the alimentary canal, subsequently to the repair of the primary injury, are five in number. In four of these, the attack seemed to be induced by indigestion (18, 28, 30, 32;) in the other (26) by over-exertion. The cases in which the fatal issue seemed attributable to a cause independent of the affection of the intestinal canal appear to be three in number. In one of these (19) dropsy supervened; in another (31) the patient was seized with typhous fever, about sixteen weeks after the discharge of the portion of bowel; and in the third (35) the patient died after an interval of more than two years, of an attack of malignant fever. Abstracting these eight cases, therefore, there remain eleven in which the death seems to have depended on the primary disease (17, 20, 21, 22, 23, 24, 25, 27, 29, 33, 34.)

11. *Appearances found on the examination of the bodies of those who died.*—In endeavouring to bring together into a general view the results of dissection in the fifteen cases in which this was performed, we may turn our attention, in the first place, to the state of the intestinal tube, as regards the repair of the solution of continuity that had occurred, and the establishment of a pervious passage for the contents of the bowels.

In one case (33) all that is stated respecting these points is, that there was continuity of surface between the inner membrane of the two parts of intestine which had been brought into apposition. In another (24) in which the union seems to have been very complete, the cavity of the intestine was not sensibly contracted, notwithstanding the formation of strong adhesions between the point of union and the peritoneum. In another (31) there was considerable puckering and contraction at the place of union, but sufficient room was left for the passage of the feces. In another (27) the intestine was contracted at one part, and the contracted part was much thicker and harder than any other, so as to leave a very small passage. In another (22) there was stricture at the place of union to such an extent as only to admit the passage of the little finger with difficulty. In one case (25) the union is said to have been very firm, but at the point of junction there was situated a small abscess, which communicated by a sinus with an abscess on the psoas muscle. In one case (23) the continuity of the intestinal canal was produced, not by the union of the two extremities from between which the discharged portion of intestine had sloughed off, but by the upper extremity opening into a pouch connected with the lower portion of intestine, at a considerable distance from the place where the separation had occurred, the mouth of the lower portion having become closed up by adhesive inflammation. In another case (26) so far as can be gathered from the imperfect account given of the dissection, the upper portion of intestine was invaginated to a considerable extent in the lower portion, through one of two apertures which existed in it.

In four cases there was found to exist a communication between the cavity of the intestinal tube and the general cavity of the abdomen. In one of these (28) the intestinal extremities, after having been united, seemed to have been again disjoined by gangrenous inflammation. In another (30) the united ends were similarly disjoined, but the separation seems to have been attributable to laceration rather than to diseased action. In this case there was a thick ring at the point of union, which is supposed to have narrowed the passage. In another case (29) no separation of the united ends had occurred, but a rupture had taken place in what the narrator seems to have supposed to be a pseudo-membranous pouch which lay between and connected them. In another (32) in which the communication had from the first been very imperfect, and in which it would appear that only one of the two folds of invaginated intestine had been detached by the process of disjunctive absorption,—the other fold, or a portion of it, having been found adhering to the inner surface of the intestinal canal,—an aperture and rent was found in the very narrow tube by which the two portions of intestine were connected. In this very singular case, the aperture of communication in the lower portion of intestine was at the angle formed by the invaginated and the containing portion of intestine.

In the next place, we have to consider the state of the abdominal viscera in other parts. In one case (23) almost the whole of the small intestines had coalesced along with the omentum into one mass. In another (27) the folds of the intestines and omentum were all glued together by a fatty curdy matter. In one (26) an adhesion of the omentum prevented the escape of feces into the cavity of the abdomen through an opening existing in the colon. In one case (21) the abdomen was filled with fetid purulent serum, and unfortunately this was the only circumstance connected with the state of the parts which was ascertained. In another case (32) the omentum was inflamed, firmer in consistence than natural, and very thick. The cavity of the abdomen, particularly the pelvis, contained a considerable quantity of grayish puriform fluid. In several cases there were found marks of gangrene in the course of the intestinal tube at a greater or less distance from the place at which the disjunction of the discharged portion had occurred. In one (22) many different parts had a livid and almost gangrenous appearance, yet admitted of being distended with air. In a second (24) the intestines were gangrenous at different points at a considerable distance from the place of union. In another (28) besides the united extremities having been disjoined by gangrene, all the adjacent parts were gangrenous, and the middle part of the mesentery very black.

12. *Circumstances deserving of attention, relative to the persons who experienced a recovery of some duration.*—A very singular feature in the history of many of the cases that have been related is the rapidity with which the patients have been restored to apparent health. In many of them, as has been seen, a very short space of time has elapsed between the dis-

charge of the portion of bowel and the return of the individual to active exercise. The appetite, too, seems in many instances to have been very keen during the progress of recovery, and in some of those which ultimately proved fatal, as has been already remarked, death seems to have been occasioned by its too free indulgence, and particularly by the employment of unsuitable diet. The knowledge of these facts suggests important cautions as to the measures which ought to be enforced even in the cases of this kind in which there seems least room for apprehension.

ART. II.—*On Malposition of the Ovaria, Bladder, and Urethra.* By J. T. INGLEBY, Lecturer on Midwifery at the Birmingham School of Medicine.

MALPOSITION of the Uterus and its influence on the bladder* having already been considered, I now proceed to make a few remarks on malposition of organs with which the uterus is more or less connected, viz. the Ovaries, Bladder, and Urethra.

1*st. Malposition of one or both Ovaries.*—To enter fully into this subject would occupy a space altogether inconsistent with my present view; but I propose to consider it in detail on a future occasion.† In very rare instances the (healthy) ovarium has been found within the hernial sac; but with this exception, the descent of the (diseased) ovarium within the recto-vaginal septum constitutes the only change of position to which the part is liable. I say nothing of the change in its relative situation of the greatly enlarged ovarium when confined within the abdomen, whether it is loose and floating, or generally adherent. The descent of the moderately enlarged ovarium into the recto-vaginal septum is by no means unfrequent; and when material in degree, will derange the functions, and slightly affect the situation both of the uterus and bladder.

An example is here annexed. A young woman was seized two or three weeks after delivery with most severe neuralgic-like pains in the bladder and course of the urethra, accompanied with intense pain in passing urine. She was sounded for calculus; leeches were applied to the external genitals; opium, carbonate of iron, and a variety of other remedies were tried in vain. Her distress becoming intolerable, a consultation was held on her case. On examination *per vaginam*, I found a substance about the size of an hen-egg situated in the recto-vaginal septum, and excessively tender to the touch. It was agreed to attempt on the following morning the elevation of the tumour above the brim of the pelvis; but in the meantime the distress had suddenly ceased: and on renewing the examination, it was found that the tumour had disappeared; a spontaneous cure had in fact taken place.

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* See Ed. Med. and Surg. Journal for 1st January 1835.

† See Midland Med. Reporter, where I treated the subject in part.

Although the ovarium when greatly enlarged cannot enter the brim of the pelvis, a portion of a dropsical ovarian sac, or a small sac in connection with a large tumour, may descend within the septum, and produce a most inconvenient pressure on the contents of the true pelvis. I once punctured the ovarium *per vaginam*, and drew off four gallons of gelatinous secretion. In every case of contemplated tapping *per abdomen* for the relief of *hydrops ovarii*, (as it is incorrectly termed,) the vagina should be previously examined, since it may possibly present a surface at once the most eligible and depending for the evacuation of the sac. The resistance which an enlarged ovarium within the septum may offer to the expulsion of the fœtal cranium is perfectly well known, and the principles of treating such cases have been very ably considered by Dr Merriman.

2. *Malposition of the Bladder.*—Although the nature and treatment of uterine descent is allowed to be now well understood, the same cannot be said of displacements of the bladder. The only important displacements demanding the use of the catheter with which I am familiar comprise prolapsed states of the bladder in connection with the womb, and simple descent of the bladder into the vagina, both in the unimpregnated state, and also during gestation or labour. Protrusion of the bladder during pregnancy is a somewhat rare occurrence; and having seen two cases possessing much practical interest, I shall presently adduce one of them in illustration.

Causes.—In connection with frequent or difficult parturition, violent straining, or long-continued discharges, the causes of vesico-vaginal protrusion may be referred either to a partial defect of muscular fibre, or an undue relaxation of that part of the vagina which is opposed to the posterior surface of the bladder. Subordinate causes may also be noticed. Thus, wherever a predisposition to this complaint exists, inattention to the calls of nature will operate most materially in its production; since, in proportion as the urine is allowed to accumulate, the bladder, instead of rising wholly out of the pelvis, and distending the subpubic region, sinks still lower; and, admitting that the *fundus* of the bladder may pass above the brim, the middle and inferior parts of the viscus bulge into the vagina, advancing at length towards, or even beyond, the *os externum*, and presenting a tumour of no ordinary dimensions. Dr Davis thinks it probable "that these malpositions of the bladder are often the result of previous adhesions of parts of its parietes to the neighbouring surfaces, in consequence of former bad labours, or of other causes of adhesive inflammation of the surfaces in question;"[*] but these causes appear to be rather incidental than general.

Character of the Tumour.—The displaced bladder may occupy either the *labium* or the *vagina.* Of the former kinds of tumour many instances are on record. Of the latter, two degrees of descent (as in descent of the *uterus*) may be conveniently described, viz. simple *prolapsus,* and actual *procidentia.*[†] The tumour, when small, may be confined to the front on either side of the vagina; but the anterior protrusion, for reasons very obvious, occurs the most frequently. When the bladder or a considerable portion of it bulges into the vagina, the canal will be occupied by a somewhat elastic but soft kind of swelling, varying a little with the inclination of the body, and acquiring a degree of tension during each effort to expel urine;—a feature highly characteristic of this malposition. The tumour recedes under the pressure of the fingers, and, after voiding urine, becomes flaccid, although it may not entirely disappear. The size of the tumour will necessarily vary with the amount of urine it contains; and as the sac is but partially evacuated, the inconvenience becomes almost permanent. It is probable, as Sir C. M. Clarke observes, that the muscular fibres "which form the pouch have not the power of contracting so as to expel the whole of the urine."[‡] A material degree of displacement affecting the uterus or bladder singly is incompatible with their common anatomical connection; with slight degrees of displacement it is otherwise. In *procidentia uteri* the bladder constitutes the anterior and superior part of the swelling. In *procidentia vesicæ,* although the uterus can scarcely maintain its natural position, the change will be inconsiderable, provided the organ possesses its natural size. But should the descent of the bladder when complete be attended with retention of urine, the fundus and body of the uterus being at the same time in the abdomen, as in advanced pregnancy,[§] the uterine orifice will probably be directed backwards, although the situation of the fundus may undergo scarcely any change. Mr Christian [||] says, that the tumour does not prevent the *os uteri* from being readily felt; but it was otherwise in the case detailed in this paper; and Dr Hamilton [¶] informs us, that, although the *os tincæ* can be felt, it will be situate very high and quite undilated,—a statement to which many exceptions may be made. In addition to an increased frequency in voiding urine, (which in some instances is exceedingly painful,) there is a sense of fulness or pressure in the vagina and a dragging sensation and pain about the umbilicus—symptoms which have been referred to the connection which subsists between the umbilicus and the superior ligament of the bladder. The pain sometimes extends to the whole genital system, and some women are said to suffer more both from bearing down and frequent micturition, when the body is horizontal than when it is recumbent. Copious vaginal discharges of the mucous kind occasionally take place. In advanced gestation the symptoms are more severe, the bearing down sensations being peculiarly troublesome.

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[*] Obstetric Medicine, Part xli. p. 989.

[†] Consult Sir C. M. Clarke's for the best account of these displacements yet published.

[‡] Diseases of Females, 2d edit. p. 133.

[§] In the middle months of pregnancy, prolapsus of the bladder will probably be relieved by the progressive elevation of the uterus.

[||] Ed. Med. and Surg. Journal, Vol. ix. p. 281.

[¶] Hamilton's Cases, p. 9 to 17.

Diagnosis.—Had not several very serious errors in diagnosis been committed, it would seem incredible that a tumour continuous with the vaginal membrane and covered by it, could be confounded with structures not only dissimilar in kind, but which are perfectly detached from the surrounding parts. In case the finger is insufficient for the purpose, the requisite information may be obtained by passing the hand. When doubt exists, the introduction of the catheter should be premised, and provided the tumour consists of the bladder, the collapse of the organ consequent on its evacuation will at once determine its real character. In *prolapsus uteri* the orifice of the *uterus* is commonly visible; but it is material to recollect, that "in *procidentia* of the bladder of long standing, the pressure of the posterior part of this viscus (when containing some urine) upon the cellular membrane, connecting it with the anterior part of the *cervix uteri*, elongates this cellular membrane, but as it does not yield readily, the anterior lip of the *os uteri* is dragged down with it, so as to be very much lengthened."* A tumour consisting of the hydrocephalic head or the membrane of the ovum will not resist the passage of the finger around its circumference. Although the protruded bladder may unquestionably recede before the finger, it will admit of being accurately examined, and the closeness of its connection with the pelvis will render it impracticable to insinuate the finger around its circumference. The tumour formed by the bladder may be very voluminous;—indeed, in a case of this kind the part was actually punctured for the hydrocephalic cranium;† and in a similar protrusion, an attempt was made to rupture the sac, under an impression that it was distended with the *liquor amnii*, but happily the attempt failed, at which period the catheter was introduced, and the evacuation of the sac was soon followed by delivery. An encysted tumour, occupying the cellular tissue behind the *pubes*, might certainly be mistaken for the protruded bladder, but all doubt would be removed by passing the catheter. The bladder when prolapsed and materially distended may occasion an important obstruction to the descent of the fœtal cranium, and be exposed in its turn to all the evils of pressure, viz. laceration, inflammation, or sloughing. Dr Hamilton tells us that, from ignorance of the true nature of the protrusion, several cases of incurable incontinence of urine have fallen under his observation.

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* Clarke on Diseases of Females, pp. 136 and 137.

† Merriman, p. 214, Appendix, case 4.

Treatment.—Whenever an impediment to the free evacuation of urine is suspected to exist, our examination must not be confined to the subpubic region, but extend to the *vagina* also. As protrusion of the bladder may be connected with advanced pregnancy, the principles of treatment are necessarily contingent upon the existing condition of the system. Whatever this may be, the regular and complete evacuation of the bladder is a point of the first moment; for since the cervical part of the bladder will constitute a part of the tumour, the urine if suffered to lodge here will render all other treatment nugatory. During parturition, whether there is any tumour above the *pubes* corresponding to the distended bladder or not, the importance of passing the catheter cannot be too strongly enforced, and this not only when the head is in the *pelvis*, making heavy pressure, but whilst the greater part remains above the brim. If the greater part of the bladder has passed into the *vagina*, the course of the *urethra* will be materially changed, and some management may be required in the introduction of a suitably curved instrument.

Descent of the bladder unconnected with pregnancy demands the treatment adopted for ordinary cases of descent of the *uterus*, viz. promoting the general health, and obtaining a contracted state of the vaginal tissues. Sir C. M. Clarke, it is true, considers that the stomach is " very rarely if ever affected by the mere displacement of the bladder," but, notwithstanding his high authority, the health in some instances suffers very severely. Tonic medicines, attention to position, the application of cold powerful injections, and when necessary the medicated pessary or sponge, as advised by Dr Locock, constitute the most efficacious measures. The term pessary, as applicable to the medicated sponge, is a misnomer; the pessaries in general use, by distending the *vagina*, defeat the possibility of cure. It is the object of the medicated pessary to increase the contractility of the *vagina*, and thus to confine the neighbouring organs within their proper boundaries. Cases of incurable protrusion are certainly best treated by the globular pessary, as advised by Sir C. M. Clarke. Since it is material to preserve a passive state of the abdominal muscles, constipation and purging should be equally avoided.

Descent of the bladder within the *labium pudendi* is best treated by a suitable bandage, and the application of cold, attention being of course paid to the due evacuation of the urine.

Case.— Mrs ——— advanced eight months in her twelfth pregnancy, suddenly felt unable to void urine. This was at five o'clock A. M. Repeated attempts were ineffectually made during the day to pass an instrument into the bladder, although catheters, both male and female, silver and elastic, of various curves and sizes, were resorted to. Every attempt to pass an instrument was followed by a discharge of blood. A tumour was found filling the *vagina*, which defeated an effort which was attempted to elevate the child's head, supposing it to have rested on the *ossa pubis*.

She was seen late in the day by Mr Porter, surgeon, and at his instance I visited the patient. A dose of opium had been previously administered.

Symptoms.—Very strong bearing down efforts at regular periods, like labour-pains, ending in the expulsion of about half an ounce of urine, which was observed to issue from the *urethra*, and notwithstanding the smallness of the quantity, it produced marked relief. The abdominal muscles contracted so violently during the paroxysm, as to resemble the action of the *uterus* under its highest degree of tension.

Examination.—The orifice and course of the *urethra* were greatly tumefied, and yet the orifice was sufficiently open to admit the point of the finger. A large spherical elastic tumour, evidently containing fluid, and continuous with the *urethra*, protruded into the *vagina*, which was fully occupied by it. As the *os internum* could not possibly be reached by the finger, the hand was carefully passed into the *vagina*, and the uterine orifice found wholly above the brim of the *pelvis*, inclining posteriorly, and sufficiently open to receive the end of the finger. The fœtal head, which rested above the *symphysis pubis*, was felt indistinctly, in consequence of the large tumour which filled the *vagina*. Nothing resembling the bladder could be recognized by placing the hand above the *pubis*, nor did pressure over that part occasion any sensation to void urine. The *uterus* from its thinness allowed the members of the child to be felt with unusual distinctness.

Treatment.—The renewed attempts to pass a catheter beyond the distance of an inch failing, a second dose of opium was given, and we left the patient at eleven P. M. In half an hour from this time she succeeded, under very violent contraction of the muscles, in passing three or four ounces of urine, and, after seven or eight similar efforts, about two quarts were voided in the space of a few hours. In the early part of the morning another quart was passed at different times, attended with proportionate relief. We repeated our visit at noon. The pain had now ceased. The tumour, though much diminished in size, evidently contained fluid, but the attempt to pass the catheter again failed.

Having ascertained the course of the *urethra* to be upwards and downwards, and quite angular, and being now able to feel distinctly the child's head on the *ossa pubis*, I made an effort to raise it, whilst Mr Porter passed into the *urethra* and finally into the bladder a very large elastic catheter curved to an angle like a pot hook (a firm stilette being retained within it) its concavity being towards the *sacrum*. About twelve ounces of urine were drawn away, the sac became collapsed, the *vagina* was no longer occupied, the child's head was felt as in ordinary cases, and the orifice of the *uterus* barely within reach of the finger, and now sufficiently open to receive the ends of three or four fingers.

Reflections.—The descent of the bladder in the *vagina* containing so large a quantity of urine is somewhat unusual. An inconsiderable part of the bladder certainly must have been above the brim, (though I could not ascertain this,) and been influenced by the action of the abdominal muscles. The concealment of the *os uteri* by the tumour, and the tortuosity of the *urethra* were striking features in the case, and until the intervening fluid had been in a great measure discharged, an effectual barrier was opposed to the elevation of the fœtal head. The position of the uterine orifice was a little singular. The same condition of the bladder above the brim would have produced *retroversio uteri.* But almost the reverse of this was the case here, the distended bladder forcing the *os uteri* above the brim and backwards.

It was curious also to observe the influence of the spasmodic contraction upon the uterine orifice, which became considerably dilated. But the action was purely mechanical, and ceased the moment the bladder was relieved. I never before witnessed so close an analogy between spurious and genuine labour-pains; indeed the preparatory changes must speedily have ended in expulsion, as in cases of convulsions, had not relief speedily been obtained. Delivery took place a month afterwards, without a return of the obstruction.

In a case of protrusion of the bladder similar to this, a surgeon punctured the tumour with a penknife, and his patient luckily recovered without any fistulous aperture. Certainly a breach of surface produced by a cutting instrument is far less likely to degenerate into fistula than if it were the result of sloughing; but it is a most summary as well as a most fearful mode of overcoming a difficulty.

3dly, Malposition of the Urethra.—All material changes in the situation of the bladder will necessarily involve more or less the course of the *urethra.* The channel either becomes very angular in its course, or unnaturally elongated. The inclination of the distended bladder over the *ossa pubis*, though primarily dependent upon laxity of the abdominal coverings, is materially increased in advanced pregnancy by the position of the fœtal head, the *urethra* being drawn upwards and forwards. The mode of passing the catheter is too plain to need comment. In inversion of the *uterus*, the situation of the neck of the bladder will correspond not only with the degree of inversion and its duration, but with the varying position of the organ inverted, and the course of the *urethra* will become somewhat changed. In a case of complete inversion at present under my care, the functions of the bladder are unimpaired; but the magnitude of the inverted *uterus* soon after delivery is such as will very probably obstruct the discharge of the urine. In an instance of complete inversion, the result of an unskilful attempt to separate the *placenta*, pieces of which were left adherent, a valued friend, who was subsequently called in, passed the catheter and drew away five pints of urine. To a person not familiar with the difficult and less ordinary duties of midwifery, the elongation which the *urethra* undergoes may appear very surprising. The length of the female *urethra* is very various, but averages, according to M. Larcher,* from twelve to fifteen lines. In one instance he ascertained its length to be fully twenty-two lines; but his remarks evidently apply to its natural state, and not to its capacity for elongation. On several occasions I have been unable to reach the distended bladder by a catheter of the usual length, viz. three or even four inches. It has indeed been denied that the *urethra* can undergo a material elongation, but surely the same textures which permit the canal to dilate will offer no resistance to its elongation, provided the head of the child is not pressing heavily upon that portion of it which enters the bladder. In two forceps cases, in which an unusually long female catheter was employed, and supposed on each occasion to have reached an empty bladder, I had to congratulate myself on subsequently passing (under a feeling of dissatisfaction) an elastic male catheter, and by relieving the bladder of a large quantity of water averting most probably inflammation, if not sloughing. In these cases we merely want an instrument which shall correspond with the lengthened course of the *urethra*. But this elongation may depend upon causes which have no relation to midwifery. For instance, a polypus is ejected from the *uterus* into the *vagina*, where its presence, although impeding probably the functions of the bladder, produces little or no expulsive effort, and provided the vaginal orifice is small, and resists its detrusion, the polypus meeting less resistance in another direction, gradually forces the *uterus* quite out of the true *pelvis*, and affects indirectly the course of the *urethra*.

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* See Gazette Médicale, No. 50.

Edinʳ Med. & Surg. Journ. Plate VI. p. 339. Vol. XLIV.

Dʳ LUBBOCK'S KNIFE FOR THE OPERATION OF FISTULA LACHRYMALIS.

Fig. 1. View of grooved, or anterior surface.

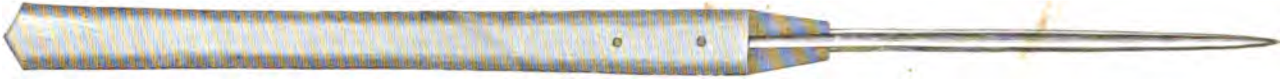


Fig. 3.

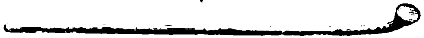
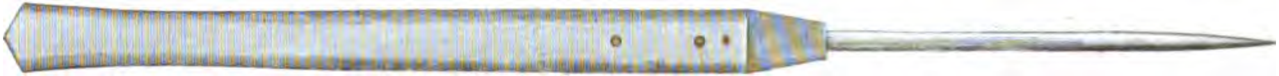


Fig. 2. View of posterior surface.



ART. III.—*Observations on the Treatment of Fistula Lachrymalis.* By EDWARD LUBBOCK, M. D. Physician to the Norfolk and Norwich Hospital, formerly House Surgeon to the Royal Infirmary Edinburgh.

THERE is scarcely an operation in surgery which has been performed in so many different ways as that for *fistula lachrymalis.* Many English authors recommend the opening of the lachrymal sac with a common lancet or phimosis knife, the division of the obstruction either with a sharp or probe-pointed bistoury, and thirdly, the passage of a probe, rather smaller than the common dressing probe,—the two last instruments being employed to overcome the obstruction in the nasal duct, for the permanent removal of which there still remains the last step of the operation, viz. the insertion of the silver nail-headed style. Performed in this manner the operation is necessarily tedious and painful. The forcing of the obstruction with the blunt probe, here as in the urethra, is oftentimes attended with much pain, and takes much time when employed with a proper degree of caution. The French surgeons generally prefer the method of Baron Dupuytren, but the necessity of an instrument for the mere insertion of the tube in the nasal duct, and of another for its extraction, convey to the mind an idea of force but ill suited to the natural delicate structure of the lachrymal passages.

In the first operations performed by myself I employed a bistoury very nearly resembling Baron Dupuytren's, with a common style, the groove of the bistoury being, however, cut directly in, and not near, the back of the instrument, in order that it might be as deep for the convenient passage of the style as the thickness of the knife would admit. But though the insertion of the instrument into the duct was easily effected, its gradually increasing and altogether too great breadth prevented its completely passing through the canal, and the groove thus cut in the back was, when the instrument was introduced, very inconveniently placed for the eye and hand of the operator.

With a view of ascertaining the proper breadth for the knife, I introduced, in one of my operated patients, in place of the silver style a small catgut bougie, which, when taken out after remaining in for twenty-four hours, exactly filled No. 2 of Weiss's catheter gage. This I replaced with a bougie, No. 2; and this in its turn swelled so as to fill No. 4 of the gage; lastly, I introduced a bougie, No. 4, but I was obliged to withdraw it in less than an hour, in consequence of the great pain and uneasiness caused by its presence, arising, I presume, from there being no longer any room left to allow of the swelling of the catgut.

It was perfectly evident, therefore, that a knife which was to pass easily through the nasal duct should not exceed in diameter the last-mentioned bougie; and yet it was not desirable to make it smaller than was actually necessary, as the size of the groove for the passage of the style must be proportioned to the size of the bistoury itself;—the greater the size of the latter the wider and deeper could be the former, and the easier the passage of the style. The blade of the knife which I have found to answer the purpose best is 2¼ inches long, including the shoulder, and less than ⅛ of an inch broad. In shape it resembles a catling, and cuts upon both edges for the extent of half an inch from its point where the knife is thin; but as the thickness of the instrument increases towards the handle, the edges become too thick to cut easily; the groove extends exactly along the centre of the anterior surface; the posterior surface is slightly convex, in order that the groove may be made as deep as possible.—(Plate VI. Figures 1 and 2.)

When made according to this fashion, the length, together with the extreme narrowness of the knife, and its being precisely of the same width throughout, allow of its ready passage through the nasal canal, so that the point will fairly rest upon the inferior wall of the nostril, and the groove will be placed looking directly forwards, and most conveniently for the easy passage of the style, which, of course, is readily passed along it, every obstacle having been already overcome by the knife, the point of which has penetrated beyond the limits of the nasal canal into the inferior meatus of the nose. The operation is most easily performed whilst the patient is sitting on a chair, with his head leaning against the breast of the operator, who stands behind the chair, and directs the knife inwards, downwards, and a little backwards, whilst he keeps the lower eyelid stretched by the finger of the left hand applied upon the margin of the orbit. Should it be the right lachrymal sac, the corresponding eyelid is most readily kept tense by the aid of an assistant, provided that the surgeon is not ambidexter. When performed in this manner the whole operation is over in two or three seconds; the bistoury withdrawn, and the style safely lodged in the canal. The opening into the lachrymal sac, the division of the obstruction, and the passage of the style are all effected by one movement of the knife.

On the Use of the Style.—In describing the operation I have said that the bistoury should be passed on until it is obstructed by the floor of the nostril, and I have found it advantageous to use a pin long enough to rest upon it; for in this manner we prevent the head of the style from sinking within the lachrymal sac, which, whatever be the shape of the head, whether flat like a nail, or globular, is always sooner or later followed by increased inflammation and suppuration. The length of the pins which I employ varies from 1$\frac{4}{8}$ to 1$\frac{7}{8}$ inch ; and in cases where the sac has become much distended by matter, and the surrounding parts have been much thickened by the effusion of lymph, I have in the first instance used them as long as two inches or 2$\frac{1}{8}$ inches. The length of the duct varies in the same manner as the length of the face, which, when measured from the top of the nose to the upper *incisores*, is very different in different persons, and even in the same person. As the swelling subsides, a small piece will require to be cut off from the end of the style. But I would always prefer having it rather too long than too short, until the swelling and inflammation have completely subsided, when it may be made to rest accurately on the fistulous orifice. (See Figure 3.)

On the interesting question, whether it be proper after a time to omit the use of the pin altogether? I have a few observations to submit. The experience of every surgeon must furnish him with cases where the patients have given up the use of the style after a time, and the disease has not returned ; and I cannot but think that in these cases I have observed in the fistulous orifice a very great tendency to close itself long before the style was laid aside ; but yet I know of no certain signs by which you may distinguish those cases in which the style may, and those in which it may not, be left off with safety. A middle course seems to be the safest in the treatment of stricture of the urethra. Where a catheter has been confined in the bladder for two or three weeks, we do not at once give up the use of the instrument, but direct the patient to pass it night and morning at first, then at night only, and then every other night, and so on. The same principle of treatment I thought would apply to the nasal duct, with this difference only, that in the case of the urethra we pass the catheter through the natural orifice of the penis, whereas in treating the strictured nasal duct, we make use of an artificial orifice, which ought rather to be compared to the orifice of a *fistula in perinæo*, and which, like that, when once the stricture is removed, generally heals up of its own accord.

The train of reasoning now followed appears to be confirmed by the results of experience. In two cases on the same day I removed the styles. On the following day, about the same time, I attempted to introduce them, intending to take them out again at the end of an hour ; in one I failed completely, and in the other I succeeded with the greatest difficulty. In a third case, that of a very intelligent man, I directed the patient to begin by taking the pin out for one hour on the first day, for two hours on the second day, and so on. In this gradual manner, I succeeded to the best of my wishes, and he now only wears the pin for one hour in the twenty-four, and the deformity caused by the fistulous orifice is scarcely at all observable.

Having spoken of the length, it now only remains for me to say a few words upon the calibre of the pin employed. I have never observed any advantage from using No. 2 or 3 of Weiss's gage. No. 1, or one rather smaller, appears to effect all the dilatation which is necessary. It is not so small as to be easily entangled in the mucous membrane, and, therefore, is readily introduced by the patient himself, and the orifice through which it passes is not sufficiently large to have an unpleasant appearance,—a point of some moment where the style is worn for only one hour in the twenty-four.

ART. IV.—*Case of Meningitis.* By DAVID MACLAGAN, M.D. F. R. S. E, Fellow of the Royal College of Surgeons. (Read to the Medico-Chirurgical Society.)

THE subject of the following case was a gentleman, 51 years of age, of light and active, rather than robust frame, and who had enjoyed good health during the greater part of his life. He had been long engaged in the active duties of a laborious and anxious profession. He possessed a cultivated mind, and was distinguished both by acuteness of perception and soundness of judgment. He was ardent in temperament, and indefatigable in business. I was called to see him on the morning of Monday, March 30, at ten A. M., and though I found him occupied as usual with matters relating to his professional avocation, he was looking ill, and suffering from pain across the forehead, accompanied by watery discharge from the eyes and nose, which he attributed to cold, or influenza, as he termed it. He said the headach, which he had felt on getting up, had become more severe since after breakfast, of which meal he had partaken heartily. The pulse was of moderate strength, and not much increased in frequency, being about 84; tongue white, but not loaded; skin soft, and of moderate temperature; feet cold. His bowels had not been moved in the morning, as they usually were. I advised him to have his feet bathed in warm water, to go to bed immediately, and have twenty leeches applied to his temples and forehead, to which he very reluctantly assented; but did not put in practice for some hours after I left him, continuing to occupy himself in this interval with his professional studies. I also ordered a purgative draught, and after its operation the use of an antimonial diaphoretic mixture.

When I saw him in the evening, he expressed himself to be quite relieved from headach; the leeches had bled freely; the bowels had been sufficiently moved, and he had taken a tablespoonful or two of the diaphoretic, which, however, he did not continue, as it had sickened him, and produced one slight attack of bilious vomiting. His pulse was 80, and soft; tongue whitish; skin moist; feet warm; and he was in all respects comfortable. He conversed with me for about half an hour with his usual good-humoured keenness and vivacity, as he also did subsequently with a young relative.

On my visit next morning, Tuesday 31st, at ten, he stated, that he had passed an excellent night; that his bowels had been freely moved; and said that, but for a slight degree of headach and my peremptory directions, as he termed them, he would have been out of bed, and meant to rise in the afternoon. His pulse was 80; his skin moist; tongue still white.

About one P. M. however, the headach had become very severe, and his feet cold, and when I saw him on being sent for at half-past three, I found these symptoms accompanied by very great restlessness, particularly tossing of the arms, and pressing the hands on the head, moaning as if from very intense pain, and considerable incoherence; pulse 100, rather full, and at the same time sharp or jerking. I immediately bled him to between twenty and thirty ounces, but without much apparent relief; the pain of head, restlessness, and confusion of mind continuing unabated. The pulse after the bleeding was reduced in strength, but had increased in frequency, being from 110 to 120, but variable. There was some slight shivering, and the extremities were rather cold, while the head was above the natural temperature; but by the external appliance of warm fomentations to the feet, and slightly tepid vinegar and water to the head, a more equable heat was induced over the whole surface, but without any abatement of the more urgent symptoms. Without leaving him I sent for Dr Abercrombie, who joined me at six P. M., when the pulse had again somewhat increased in strength, and we concurred in the propriety of a farther abstraction of blood, which was accomplished to the amount of eighteen ounces by cupping from the temples, but produced no apparent effect, except a reduction in the force of the circulation. Pounded ice was applied to the head, and warm fomentations continued to the feet. On our visits later in the evening, no improvement had taken place. The pulse, though reduced in strength, varied from the rate of 80 or 90 to 120 within the shortest possible intervals, and the respiration also was very irregular; the restlessness was undiminished, and the moaning continued, though not so incessantly as in the afternoon. The confusion of mind had become still greater, and the only marks of consciousness elicited were the putting out the tongue occasionally when desired, and the expression of a simple affirmative or negative in answer to our questions, though not always marked by intelligence. There was, however, no impatience of light, no intolerance of sound, no violent delirium. There was little variation in the state of the symptoms while I remained till twelve that night. The pupils were rather dilated, but contracted on the approach of light. In addition to the application of the pounded ice to the head, and the repetition of the fomentations to the feet, a blister was applied to the back of the neck, and a purgative draught administered.

I saw the patient early next morning, Wednesday April 1, when a young relative, of the medical profession, who had remained with him during the night, reported that it had been passed in a very restless manner; that he had appeared to be asleep twice only; and *that* merely for the space of about ten minutes at a time; the pulse had not generally exceeded 100, but had been variable; there had been two evacuations from the bowels of a dark slimy appearance. The pulse was now varying from 100 to 120, and when I again visited him along with Dr Abercrombie at ten A. M. we found it to be pretty steadily at 120; the tongue foul; eyes suffused; restlessness still great, though not violent; confusion of mind undiminished. The blister had risen well, but he was annoyed by strangury, which continued during the greater part of the day. The pupils were now contracted, and but little obedient to the impulse of light, and I observed that, in getting out for the purpose of attempting to make water, which he could not be prevailed on to do by means of an urinal in bed, he was directed to the chamber-pot chiefly by the sense of touch.

The act of swallowing, though reluctantly commenced, was performed without difficulty, and I succeeded in getting him to take a considerable quantity of mild diluents, and some teaspoonfuls of the *Spt. Ether. Nitros.* He also took twice or thrice a little thin arrow root. During the frequent visits which Dr Abercrombie and I made during the day, there was little variation in the symptoms, except occasional irregularity in the force and frequency of the pulse and breathing.

As Dr Abercrombie was called out of town in the afternoon, I requested Professor Turner to see the patient with me early in the evening, when we particularly remarked a fixity of position of the head, and the moveless stare of the widely opened eyes, which seemed to follow no object. The restlessness, particularly of the arms, remained as before. On finding some increase in the strength of the pulse and heat of the head, it was deemed advisable again to apply leeches to the temples and forehead, which bled freely. On our subsequent visits the only change was some subsidence of the restlessness, and towards eleven at night a greater verging towards sleep, than had occurred since the first alarming symptoms manifested themselves. But this state was of short duration, for about two hours afterwards, one A. M. on Thursday morning, I found him with increased restlessness and jactitation, the pulse exceedingly irregular, though by no means very feeble, the breathing varying from the rate of 10 to 30 in a minute, at short intervals, but more generally slow, deep, and laborious. He continued much in the same state, but with a gradually weakening pulse, and other marks of sinking till about six A. M. when he expired without any struggle or convulsive motion, except the most rapid and incessant rolling to and fro of the eyeballs for about two hours previous to dissolution.

Inspection.—The body was examined thirty-two hours after death, in presence of Dr Abercrombie, Professor Turner, Dr Allen Thomson, Mr Arthur Anderson surgeon, a relative of the family, and myself. The dissection was carefully and minutely performed by Dr Allen Thomson.

On cutting through and dissecting off the scalp nothing unusual was observed, excepting perhaps a slight turgescence of the cellular substance with blood. The skull was of a very regular oval form, and its parietes of a generally uniform thickness throughout, excepting at one or two places where indentations on the inner surface received the *glandulæ Pacchionii*, one of which was of considerable size.

Before opening the head, the body was laid with the abdomen downwards, and the head raised so as to make the face nearly in a vertical position. The *dura mater* appeared in all respects natural; the veins near the longitudinal sinus were turgid with blood.

When the *dura mater* was removed a layer of lymph was seen covering the greater part of the surface of the cerebrum. This lymph had all the appearance of having been deposited within a few days before death, having the pale yellowish green colour, characteristic of recently formed coagulable lymph. A great part of it had, however, acquired considerable consistence, so as to glue the arachnoid and *pia mater* firmly together. The lymph was effused more or less over the whole upper surface of the cerebrum. It was much thicker and more dense in its consistence just behind the frontal bone, than on any other part of the upper surface of the cerebrum. In this place the lymph was deposited in such quantity, and so uniformly, that scarcely any part of the surface of the anterior lobes could be seen; while in most other parts of the upper surface of the cerebrum it occupied only the triangular spaces between the convolutions, or rather between the arachnoid membrane, and the folds of the *pia mater* descending into the brain between the convolutions.

The substance of the cerebral hemispheres, as far as the roof of the lateral ventricles, and the *corpus callosum*, was removed in thin successive slices, and it was found that in many places the lymph extended from the surface to some depth between the convolutions, and threads or small patches of false membrane were formed. In some instances the lymph was found at the very bottom of these spaces between the folds of the *pia mater*.

The surfaces of the two hemispheres which are in contact with one another were also each of them partially covered with a layer of lymph, which made them adhere to one another in a line a little way above the *corpus callosum*. The lymph went no farther than this line of adhesion, so that the *corpus callosum* was left quite free from it.

On the surface of the base of the *cerebrum* there was also some lymph effused, but in considerably less quantity than on the upper surface and sides. On the base the lymph was upon the whole distributed in a more uniform layer, and at one place, viz. the point of junction of the *cerebrum* and *cerebellum*, and extending a little backwards from it, the lymph was accumulated in greater quantity than in any other place. The lateral hemispheres of the *cerebellum* were also covered by a pretty uniform layer of lymph; but the central parts of the base of the brain and the origins of the nerves, from the brain and *medulla oblongata*, as well as the *pons Varolii*, were free from any lymph-like deposits. In some of the spaces between the convolutions the lymph was quite soft, and in some places where there was no lymph a clear fluid was effused.

The substance of the brain when cut into appeared quite as firm as is natural; it might perhaps be a little more so, owing to the general effusion of watery fluid which seemed to have taken place. From the same cause the *pia mater* was pealed off the whole surface with great ease.

The right lateral ventricle contained nearly one ounce of a clear fluid, the left about half an ounce. They communicated freely with one another, however, by the hole of Monro.

There was seen adhering to the inner surface of the ventricles, especially in their posterior *cornua*, a layer of lymph of the same greenish-yellow colour as that effused on the surface of the brain, but of a much softer consistence, indeed so soft as to have very nearly the appearance of pus. The serous fluid of the ventricles was not, however, mixed with or rendered turbid by this matter. This lymph-like matter was very easily separated from the inner surface of the ventricle by the handle of scalpel. The choroid plexus was slightly vesicular.

No other morbid appearance presented itself in the brain. The *corpora striata*, *thalami optici*, *corpora quadrigemina*, *pineal gland*, *pons Varolii*, *cerebellum*, and *medulla oblongata*, were all sound.

Remarks.—The case now detailed to the Society adds another example to the many on record of the great variety in the symptoms in individual cases, as well as of the obscurity which so often attend the inflammatory affections of the membranes of the brain. In the present instance several symptoms were wanting which very generally accompany the progress of *meningitis*, some of which, indeed, have been considered as pathognomonic of the disease; but we had here neither impatience of light, intolerance of sound, violent delirium, convulsions nor vomiting; for I consider the slight attack of bilious vomiting on the Tuesday to have been produced by the antimonial mixture, as it never recurred after the use of that medicine was given up.

On comparing the history of the case with the appearances on examination of the head after death, it presents also some anomalies not easily reconcilable, and such as I have not met with in the recorded experience of any of the writers on this subject. From the nature and extent of the deposit of lymph, and the consistence it had acquired in some parts of the membranous covering of the brain, it may, I think, be inferred, that the inflammatory action by which it was produced, though not perhaps of long standing, must have commenced previously to the first manifestation of alarming symptoms on Tuesday, and it seems remarkable, therefore, that the patient should have experienced so complete a remission of pain of the head, and so great general relief, in the interval between the afternoon of Monday and Tuesday. I was informed also, that on the preceding Saturday, two days previous to my being called to see him, (which was on Monday,) he had, while engaged at a meeting of a commission of public inquiry, in which he took a deep interest, and an active part, complained of intense headach, as unfitting him for business, and had in consequence given up an intended visit to a friend in the country; but on the following day he made no complaint, and appeared to his family and friends to be in his usual health and spirits. When I first saw him on Monday, the constitutional disturbance was not so severe as I had often seen attending the epidemic catarrh or influenza, or the rheumatic or neuralgic affections of the head, under which so many individuals were suffering at that season; and the treatment by leeching, was in truth, dictated rather by a desire to shorten the duration of an ordinary illness in an individual, to whom time, and ability to labour, were particularly precious, than from any conviction of its absolute necessity, or dread of the alarming attack which so soon followed. It is, however, a melancholy satisfaction, that though the symptoms were in many respects obscure and anomalous, the treatment was directed throughout to arrest the progress of inflammation and avert its consequences. The patient was unremittingly watched and tended throughout his rapid and fatal illness by an excellent, intelligent, and affectionate sister, as well as by his medical attendants; so that, though our efforts unhappily were unavailing, nothing was wanting, at least so far as our knowledge and judgment extended, or the deepest interest and warmest affection could prompt.

ART. V.—*Two Cases of Hæmatemesis.* By C. W. GRAHAM, M. D. Surgeon Edinburgh Militia.

CASE 1.—Betwixt the hours of nine and ten of the morning of the 11th February 1834, I was urgently requested to visit Miss — residing at the house of Mr G. of this place. On being admitted into her bed-room, I found her in the following state. Complains of having had for some days past a disagreeable load and uneasiness about the *præcordia,* with flushing of the face and total loss of appetite; had got up, and taken breakfast with the family as usual; but soon after became sick and squeamish, when she ejected from the stomach nearly half an English pint of pure blood, intermixed with some of the contents of the stomach, which was in a basin by her side. Though by this she felt much relieved, she was chilly, and experienced a cold creeping sensation along the inferior extremities, while the countenance was pale. She had some headach; the pulse was 72, moderately strong; the tongue white, and somewhat loaded. She did not remember when the bowels were last moved. But the abdomen on making firm pressure felt tender, full and hard, with *strong pulsation* extending from the epigastric to a little below the umbilical region. The catamenia were stated to be regular.

The feet were immediately immersed in warm water, and I abstracted from the arm ten ounces of blood, when she got faintish, but soon recovered by being placed in the recumbent posture. Bottles of warm water were applied to the feet. A domestic enema was also directed to be administered immediately, and as soon as convenient the patient was to take an ounce of castor oil, followed by six grains of calomel. When I visited the patient at two o'clock P. M., one large dark-coloured fetid scybalous motion had taken place from the glyster; the pulse was 110, hard and regular; the face was flushed; and the tongue parched, with great thirst. The castor oil and calomel were directed to be repeated, and the face and hands to be frequently sponged with tepid water and vinegar.

At eight P. M. the patient was considerably relieved. She had passed two dark, fetid, pitchy motions; the pulse was 90, and soft; the surface was less hot; the abdominal pulsation less strong;

the thirst was diminished; and the tongue was more clean and moist. She complained, however, of being faintish occasionally. She stated that she had had two attacks of vomiting of very bitter stuff, and described to be similar to what has been passing from the bowels.

She was now ordered to take at bed-time ten grains of powder of jalap, and four grains of calomel, with as much of the electuary of senna as might make a bolus, and next morning four ounces of infusion of senna with Epsom salts.

On the 12th she had spent a comfortable night, and three stools of a dark olive appearance, very slimy, were passed. There was no return of vomiting, the pulse was 96, moderately full. The tongue was dry and white; the urine high-coloured; the thirst abated; abdominal pulsation still continues, but not so violent as at last night's visit; bowels less tender, tense and full; oppression about *præcordia* relieved; but headach, faintishness, and flushing of face continued.

Lemonade or solution of cream of tartar for common drink; gruel for diet. Continue tepid sponging.

Evening visit.—Has had some hours of comfortable sleep, and feels refreshed. The headach and flushing of face continue; pulse about 100, and soft; tongue less loaded and moist, cleaning towards the edges; no return of vomiting; and faintishness gone. She had, from a second dose of the infusion of senna and salts, one motion of a more natural colour and odour; fulness, tenderness, and tension of the abdomen still more diminished; thirst inconsiderable; but the surface is hot and dry.

A powder, consisting of three grains of calomel and five of the antimonial powder, was ordered to be taken at the hour of rest.

13th. Had a tolerable night; perspiration general over the body, which still continues moderate; the pulse had fallen to 80, and was calm; bowels open, and motions assuming a more natural appearance in every respect; abdominal pulsation weaker, but there still continued a slight degree of tenderness over the left hypochondriac region. The thirst and headach were gone, more liveliness and expression of countenance. A little beef-tea was now allowed.

Evening visit. Continues much in the same state. The colocynth pill was ordered at bed-time to the extent of ten or fifteen grains.

14th. On the 14th she was much improved; and on the 15th, the bowels were regular, and the excrements natural in regard to colour and odour; and all ailment was gone.

Case 2.—Saturday, April 4, 1835. I was requested to visit Mr T.'s servant, Mary B., aged 27, stout, and plethoric in her habit, who, whilst stooping, was seized with vomiting of blood. I found her in bed, complaining of a sense of great load and oppression at the *præcordia*, with considerable pain on pressure over the epigastric region. The skin was of natural heat; the face pale; the pulse 92, full and compressible; the tongue dry in the centre, and slightly furred; thirst rather urgent; the bowels said to be open, but motions very scanty, and of a dark colour. The *catamenia were present*, and are so regularly every three weeks. She had an attack similar to this about six years ago.

Twenty ounces of blood were immediately drawn from the arm; and she was desired to take immediately a bolus, consisting of six grains of calomel, a scruple of jalap powder, and a little electuary of senna, and the same in the course of three hours afterwards. After the bleeding, the pulse at 98, became softer and more full; and the expression of countenance was more expanded and florid.

Half after 8 P. M. There was no return of vomiting; pulse 84, soft, and moderately full; thirst continued. As the medicine had not acted, the bolus was directed to be immediately repeated, to have gruel for diet, and early next morning to take six ounces of infusion of senna, with Epsom salts. The blood in the first drawn cup was sizy, that in the others natural.

5th. 10 A. M. She had passed an indifferent night. The pain over the epigastrium, however, was only felt when pressure was made, or on taking a full inspiration. The tongue was clean and moist; thirst gone; the expression of countenance lively; and the pulse 76, natural as to fulness and strength; and six very fetid motions, scybalous and of a dark olive colour, had been passed. The patient was instructed to take at mid-day three ounces of the saline infusion of senna. Barley-water or gruel, with the addition of a little lemon or orange juice, was allowed for diet.

7 P. M. She had been rather restless during the afternoon, with increase of thirst; the pulse 94, frequent, and somewhat contracted, and the tongue white. Two of the compound rhubarb pills were directed to be taken at bed-time.

6th. 11 A. M. Slept well until six this morning; but on being raised to have the bowels moved, had a slight recurrence of the vomiting of blood; has had three extremely dark fetid bilious-looking motions. The pulse was 120, soft, and weak; the tongue white; face pale; and complained of pain in the breast, but none when firm pressure is made on the epigastrium. She felt faintish on being moved. A blister was applied to the painful part of the breast, and half an ounce of castor oil was administered. Absolute rest and low diet were enjoined.

9 P. M. She had a slight return of vomiting of blood, dark and grumous in its nature. The bowels were well opened by

the oil, but the motions were black, oily, and pitchy. Thirst is gone; the tongue is whitish and moist; the pulse 100, soft, and has gained strength; expression of countenance lively; and, by her own account, she says that she feels better. Blister not yet removed.

7th. 11 A. M. Had no sleep until four this morning; has had two motions, less consistent, but still very black; tongue more clean and moist; pulse 90, soft, and of moderate strength; expression of countenance improving, and not so anxious. The blister had risen well, and the soreness in the breast gone. She has had frequent attacks of spasm in the *gastrocnemii* muscles. —The half-ounce dose of castor oil was repeated, and the same diet was continued.

9 P. M. Has slept a good deal to-day, and feels refreshed from it; two motions from the oil, loose, and of a dark gingerbread appearance; pulse 96, soft, and regular. No return of spasm in the legs.

On the 8th she had passed a good night, and felt better; had a slight return of the spasms after last night's visit. The pulse continues at 90, soft; no motion; tongue slightly furred, clean and moist at the tip and edges.—The castor oil to the extent of half an ounce was repeated.

8 P. M. Three motions similar to the last; pulse 88; tongue less furred; skin cool; thirst gone; has felt a relish for the food taken to-day.—To have a little porridge and milk.

9th. Slept well; pulse 88, soft, and regular; no motion; tongue moist, and furred in a slight degree; complains of pain in the head.—*Rep. Olei Ricini* ℥*ss. ut heri.*—Weak beef-tea was allowed for dinner.

About four o'clock I was desired to see her without delay. After taking the oil she felt some uneasiness at stomach, with increase of headach; and immediately on swallowing the beef-tea, she vomited a considerable quantity of dark coagulated grumous blood, along with the oil; soon after another recurrence of the hemorrhage took place, and pure blood made its appearance, which coagulated on becoming cold. The pulse was moderate in strength and fulness, but very soft and compressible. She felt thirsty, and was uncommonly pale, the vital powers being laid apparently prostrate. Before my arrival the bowels had been acted upon, and the motion bore the appearance and consistence of pitch.—She was now instructed to take a pill consisting of a grain and a-half of opium, and two grains of acetate of lead.

9 P. M. No return of the vomiting; pulse 102, improving in strength; tongue rather dry; some thirst; headach gone.—She was ordered to take at ten o'clock a pill consisting of three quarters of a grain of opium and one grain of acetate of lead,

and a second pill of the same strength in the course of four hours thereafter. Gruel or barley-water to be taken cold, in small quantities occasionally; cool air to be freely admitted; and it was enjoined that the patient on no account be raised into the erect posture, but be kept in a state of perfect quietude.

10th. She had passed a comfortable night, and says she has no complaint. The skin is cool; face of a chlorotic appearance; the tongue, lips, and gums rather pale, the former somewhat furred; pulse 98, small, and soft; no motion from the bowels; no thirst.—*Sumat statim Pulv. Jalap.* ℈ss.; *Calomelanos* gr. vi. *et tribus horis præteritis Sodæ Phosphat.* ℥ss. *ex aqua.* Gruel and arrow-root for diet.

8 P. M. Vomited the salts; no motion; pulse 96; no thirst.

℞. *Ext. Cathart.* ʒi. *Hyoscyam. Nigri* ʒss. *M. et in Pil.* xx. *æquales divide, quarum capiat duas statim.*

11th. Passed a good night; pulse 94, rather firm; tongue pale and moist, still furred in a slight degree towards the centre; the skin is cool; passed two dark-coloured feculent motions. The pills continued. Same diet.

8. P. M. Has been tolerably well all day; pulse 90, soft; no motion from the pills ordered at the morning visit. They were therefore desired to be repeated at the hour of rest.

12th. Slept well; pulse 86, regular and soft; the bowels have been twice opened, and the motions are of a more natural appearance; the tongue is pale, but less furred. Same diet.

13th. Continues to improve; was allowed to take a Seidlitz powder.

14th. Going on well.

15th. Dismissed, with strict injunctions to attend to the state of the bowels.

It has been supposed that *hæmatemesis*, when it occurs in females, is generally vicarious of the menstrual discharge. But that in the foregoing cases, it did not originate from such a cause is an undoubted fact; as the *Catamenia* were in both quite regular, and in Mary B. were present at the time when attacked with the disease.

That the disease in question did not depend on any organic affection of the viscera contained in the abdomen is equally true; for after the most minute examination none could be detected. But that it owed its cause to an overloaded state of the intestinal canal, is sufficiently proved by the recovery of both patients under a course of purgatives. No symptom of much importance occurred in the case of Miss ——, excepting the pulsation in the epigastrium, which evidently arose from the quantity of indurated feces impacted in the colon; the pulsation of the aorta being consequently more easily felt through a hard intermediate than a soft substance.

The spasmodic affection of the *gastrocnemii* muscles in Mary B.'s case seemed to be occasioned by the very acrid state of the hepatic secretion, acting on the nervous system. The relapse in her case was partly owing to her making a rash attempt to get out of bed.

Dalkeith, 18*th June* 1835.

ART. VI.—*Contribution to Statistics of the British Army.* By HENRY MARSHALL, Deputy Inspector-General of Army Hospitals.

No. III.

The following official return of the Mortality which occurred among the men of the British Army serving in the Windward and Leeward Islands, from January 1796 to 31st December 1805, being a period of ten years, is extracted from the United Service Journal for the month of July 1835.

	Effective strength each 1st of Jan.	January.	February.	March.	April.	May.	June.	July.	August.	Septem.	October.	Novem.	Decem.	Total in each year.
1796,	15,928	67	75	100	201	366	373	487	930	965	1273	850	908	6585
1797,	14,709	600	292	287	336	133	216	241	345	333	377	540	380	4080
1798,	13,650	148	143	116	166	91	134	202	186	171	207	216	176	1956
1799,	12,419	130	100	96	88	107	104	89	90	126	90	116	104	1240
1800,	13,358	80	99	75	75	108	222	206	191	157	144	124	127	1599
1801,	14,430	143	127	65	101	242	302	382	338	334	366	222	148	2770
1802,	16,547	128	123	93	177	75	71	123	114	135	130	83	64	1316
1803,	12,087	74	64	48	85	69	60	.84	110	128	171	161	134	1173
1804,	11,410	134	95	98	106	139	139	252	327	239	161	197	138	2025
1805,	11,558	110	98	58	88	129	103	187	360	253	360	203	223	2172
Total each month.		1614	1197	1036	1423	1459	1724	2253	2991	2826	3279	2712	2402	24,916

TABLE I.—Showing the Strength of the British Army serving in the Windward and Leeward Islands, from 1796 till 1805, and from 1810 to 1828 inclusive, together with the annual centesimal ratio of Mortality from 1796 till 1828, being a period of 33 years.

	Years.	Strength.	Deaths.	Centesimal ratio of mortality.	Mean centesimal ratio of mortality in each of the following periods.
Compiled from materials extracted from the United Service Journal of July 1835.	1796,	15,928	6585	41.3	18.5
	1797,	14,709	4080	27.7	
	1798,	13,650	1956	14.3	
	1799,	12,419	1240	9.9	
	1800,	13,358	1599	11.9	
	1801,	14,430	2770	19.2	
	1802,	16,547	1316	8.	
	1803,	12,087	1173	9.7	
	1804,	11,410	2025	23.	
	1805,	11,558	2170	18.7	

	Years	Strength.	Deaths.	Centesimal ratio of mortality.	Mean centesimal ratio of mortality in each of the following periods.
Compiled from materials communicated by Dr Robert Jackson, *Vide* vol. i. Transactions of the Medical Society of London.	1806,			11.1	8.9
	1807,			9.7	
	1808,			16.6	
	1809,			14.2	
Compiled from returns transmitted to the Adjutant-General in pursuance of an order of the House of Commons, dated 2d June 1829.	1810,	10,691	1688	15.7	11.3
	1811,	9,733	1515	15.5	
	1812,	10,807	1031	9.5	
	1813,	11,277	870	7.7	
	1814,	9,204	791	8.5	
	1815,	8,931	1048	12.7	
	1816,	6,153	969	15.7	
	1817,	3,882	909	23.4	
	1818,	3,423	487	14.2	
	1819,	3,344	319	9.5	
	1820,	3,108	358	11.5	
	1821,	2,804	427	15.2	
	1822,	2,880	223	7.7	
	1823,	3,421	163	4.7	
	1824;	4,051	309	7.6	
	1825,	3,688	375	10.1	
	1826,	4,298	316	7.3	
	1827,	4,044	380	9.4	
	1828,	3,858	308	8.	
Mean of 33 years,		-	-	- 13.4	

Table II.—Showing the Centesimal Ratio of Mortality among the Troops in the Windward and Leeward Islands in the different months of the year, for a period of ten years, or from 1796 to 1805 inclusive.

Months,	Deaths.	Centesimal ratio of deaths.
January,	1614	6.5
February,	1197	4.8
March,	1036	4.2
April,	1429	5.7
May,	1459	5 9
June,	1724	6.9
July,	2253	8.7
August,	2991	11.9
September,	2826	11.4
October,	3279	13.3
November,	2712	10.9
December,	2402	9.7
	24,916	100.0

According to the above table, March is the healthiest, and October the most unhealthy months of the year in the Windward and Leeward Island command, which comprehends the islands of Barbadoes, Trinidad, Grenada, St Vincent's, St Lucia, Dominica, Antigua, St Christopher's, the Bahamas, Guyana on the Continent, and all the other tropical British possessions in the West Indies and Continent of South America, except the Island of Jamaica and the settlement of Honduras, which form a separate command. The troops in the Bermuda Islands, which lie in about 33° North Latitude, report to the Commander of the forces in Lower Canada.

TABLE III.—Showing the Strength, Mortality, and Centesimal Ratio of Mortality of the British troops employed in Jamaica and Honduras, as also of the colonial troops employed in Jamaica, Honduras, and the Windward and Leeward Islands, from 1810 to 1828, compiled from returns transmitted to the Adjutant-General's office, in pursuance of an order of the House of Commons, dated 2d June 1829.

	TROOPS OF THE LINE.			COLONIAL TROOPS, (Africans.)		
Year,	Strength.	Deaths.	Ratio of deaths.	Strength.	Deaths.	Ratio of deaths.
1810,	2952	371	12.5	4841	163	3.3
1811,	3006	413	13.7	4610	291	6.3
1812,	3131	504	16.0	5143	281	5.4
1813,	2878	402	13.9	4898	325	6.6
1814,	3621	341	9.4	3661	266	7.2
1815,	3129	374	11.9	5727	325	5.6
1816,	4485	459	10.2	5319	450	8.4
1817,	2179	321	14.7	2584	180	7.0
1818,	1956	207	10.5	2299	98	3.9
1819,	1910	800	41.8	1528	123	8.0
1820,	1788	295	16.5	1414	59	4.1
1821,	2116	446	21.0	1321	48	3.6
1822,	2128	311	14.6	1306	65	5.0
1823,	2086	174	8.3	1229	56	4.9
1824,	2500	251	10.0	1185	22	1.8
1825,	1697	802	47.2	995	29	3.0
1826,	2110	165	7.8	1108	44	4.0
1827,	2132	640	30.0	1163	54	4.6
1828,	2243	184	8.2	1403	59	4.2
Total,	48045	7460		56734	2938	
Mean of 19 years,	2528	392	15.5	2733	153	5.5

In a former number of this Journal, Vol. xl., page 319, I submitted a statement of the strength and mortality of the troops of the line in the Jamaica command from 1812 till 1828, but as the materials from which that return was made up were not official, I have compiled the present table, and, as it is derived from well authenticated documents, I have more confidence in the accuracy of the results.

On comparing these tables with the return of the health and mortality of the troops employed in Ireland for a period of thirty-two years, or from 1797 to 1828, inclusive, as given in a former number of this Journal, Vol. xl., page 39, two circumstances attract attention. 1*st*, The remarkable difference in the ratio of mortality in the two countries,—the mortality in the Windward and Leeward Island command being about nine times, and the mortality in the Jamaica command being ten times, that which occurred in Ireland. 2*dly*, The comparatively uniform ratio of mortality among the troops in Ireland, when compared with the annual ratio of mortality in the West India stations. The lowest centesimal ratio of mortality in Ireland during the period stated was 1.1, or 1 death in 90, and the highest 2., or 1 in 50; whereas the extreme ratios in Tables No. I. and III. are 4.7, or 1 in 22, and 47.2, or 1 in 2⅛. The highest ratio of mortality in Ireland is never more than double the lowest, whereas, by the above tables, it appears that the ratio of mortality in the West Indies is sometimes ten times higher in one year than it is during another. It will be recollected, that the period of life of the men belonging to the different regiments in the British army, whether they are employed at home or abroad, is very similar, the extreme ages being about 19 and 41 years, consequently the ratio of mortality of troops serving in different stations admit of comparison.

ART. VII.—*Observations on Petechial Fevers and Petechial Eruptions.* By JOHN HOME PEEBLES, M. D. Fellow of the Royal College of Physicians Edinburgh, Member of the Royal College of Physicians Florence, &c.

IN presenting the following observations on contagious petechial or eruptive fever, it is not my intention to enter into an examination of the various febrile diseases to which the human body is liable, nor shall I engage in the controverted opinions which have been advanced concerning the contagious or non-contagious nature of such affections, except so far as I may consider these to be applicable to our subject, for such a disquisition would, I apprehend, be unsuitable to my present purpose, which is merely to communicate certain facts and illustrations on the character of a species of fever which is found to be accompanied with an exanthematous eruption or efflorescence of the skin, from whence it has derived, though erroneously, the name of petechial disease.

Before tracing the history of this fever, and describing its character, I shall first examine the exanthematous appearance which forms so prominent a feature of the disease, and will show the difference betwixt this eruption and that cutaneous affection to which the name of *petechiæ* has usually been given, arising from a certain condition of the system; an affection with which the true febrile exanthema has been often confounded, and the real character of the disease thereby frequently obscured.

On consulting the writings of some of the ancient authors, we find that petechial eruptions or spots were often observed in some of the febrile diseases of which they treat. Hippocrates, Aetius, Jacobus de Partubus, and others allude to them; but it was not until the beginning of the 16th century that they were particularly mentioned by Fracastorius in an epidemic fever that prevailed at that time. So little, indeed, had these eruptions been known, that they were considered as constituting a new disease, which had only appeared then for the first time, and was supposed to have been introduced into Italy and the rest of Europe, from the eastern shores, or from the islands in the Egean sea, particularly from the island of Cyprus. I unite, however, in opinion with other writers, that these petechial affections were not unknown to the more ancient authors, and that they were only brought more fully into notice by Fracastorius.

From that time, then, they began to be better understood, and many authors have since published accounts of various epidemics in which these eruptions generally appeared; but even, to a late period their character had not been well defined; there was much discrepancy of opinion regarding their real nature, and a want of discrimination of some of the more prominent early symptoms of the disease with which they are associated, when they were latterly more fully described by Hasenohrl, Burserius, Palloni, (and other recent authors,) who give the best account of these eruptions.

As the term *Petechiæ* or *Pestechiæ*, as it should be called, from the word *pestis*, has been indiscriminately used in expressing different kinds of affections of the skin in fevers, I shall in the sequel apply it as denoting those spots or stains that frequently occur towards the last stage of fevers, and as symptomatic of an adynamic or putrid state of the system. The other, or true exanthematous eruption, I would call, for the present, the contagious febrile eruption, when I mean to express that affection which I consider to be pathognomonic of this fever, in the same manner as the variolous eruption, that of measles, or any other exanthema denote the respective diseases to which they belong.

This contagious febrile eruption, or, as it has been improperly called, *primary*, is an exanthematous affection, the production of human effluvia, when society is placed in circumstances hereafter to be mentioned, favourable for its developement, and should be considered the effect of a poison *sui generis*. It arises from a miasm which generates in the human body an eruptive fever distinct from all others, as other exanthematous fevers are distinct.

This exanthema appears for the most part, from the third to the seventh day of the fever. In a few cases it has preceded the fever, and in others its appearance has been delayed till the twelfth or fourteenth day. The eruption is of a florid or rather bright red pink colour, or that of the *rosa centifolia*, being the product of inflammation, and, as in other efflorescences of this nature, the spots disappear on pressure, and soon return after the pressure is removed. This is not the case with petechial stains, which cannot be made to disappear in this way.

The more exuberant resemble the measles, and have been mistaken for these, but this eruption is more papillar, more rough to the touch, and is sensibly elevated to the naked eye; and although it may be sometimes grouped or crowded together, the spots do not coalesce so much as the measles, but each *papilla* keeps almost always separate from one another. The eruption is sometimes vesicular, and is occasionally followed by desquamation of the surface like scarlatina. The papillæ are occasionally not so distinct, and then appear scarcely to raise the *epidermis*, and in such cases, without accurate examination, they are apt to be overlooked, or mistaken for the miliary eruption, although they are different in character from the latter, and may in such cases be generally seen raised with the aid of a lens, while the difference of colour will distinguish them from the petechial stains.

This exanthema sometimes covers the whole body, the face and hands excepted, although I have seen these parts also covered in a warmer climate, but it is more frequently confined to the breast, epigastric region, the sides, back, arms, and thighs: and often in some constitutions, where the disease is of a mild character, as in children, in whom, indeed, it sometimes does not appear at all, it will only be discovered on the epigastrium, the sides, and back; parts that are warmer and always covered.

It does not recede at the beginning of its course, except sometimes by an increase of the disease, by improper treatment, or from a peculiar condition of constitution, when the disease passes on rapidly to the pernicious state.

It is, moreover, sometimes evanescent, disappearing in one part of the day, and returning in another, so that it may not be observed at certain times on examination.

Again, the spots may be few in number, as in some other exanthematous diseases, and so pass unnoticed, particularly as in such cases they are confined to parts well covered. But only one or two instances of this kind will be found in a large family, when the eruption will be well-marked in the others, resembling in this respect other eruptive fevers.

This affection may be benign throughout, or assume a malignant character, according to individual diathesis, the nature of the prevailing epidemic, or the mode of treatment.

The petechial or symptomatic, or, as they have been improperly called, *secondary* eruptions, are simple stains or ecchymoses, caused by transfusion, or transudation of blood from the capillary vessels of the skin, proceeding from an advanced degree of atony of the solids, and dissolution, and disoxigenation of the blood itself, and may accompany any species of fever whatever, even the eruptive fevers, when, from improper treatment or individual peculiarity, they are converted into an adynamic state. They are of different dimensions, from small points or *stigmata*, to large patches or stripes called *vibices*. They never appear at the beginning of the disease, except under peculiar constitutional depravity, original or acquired, but generally come on in the advanced stage. A species of *petechiæ* occurs sometimes early in the fever, chiefly in children and females. The spots in such cases resemble flea-bites, and have been mistaken for these. Dr Percival in his Reports mentions such early *petechiæ* to have been frequent among the children in the Bedford Asylum, when the apartments were much crowded. Drs Alison and Christison have also remarked this early petechial eruption in children as being of a mild character. They generally soon disappear on the patients being removed to better ventilated apartments, and treated with purgatives. Dr Bateman has noticed the slighter degree of *purpura* or *petechiæ* in children who are ill fed, and nursed, and who reside in close places, where they are little exercised, or in women shut up in similar situations, and debilitated by want of proper food, and by fatigue, watching, and anxiety. These seem to be analogous to the early *petechiæ* in fever, and both proceed from the same cause—a peculiar state of constitution, which predisposes to the action of contagious fever.

In such cases of early *petechiæ* both these and the febrile *exanthema* will be found together in adults, and the *petechiæ* which generally appear late in the disease may occasionally also be mixed with the true eruption, that is, the former may have come on before the latter vanishes. But in all these cases they bear no relation to each other, no more than petechial spots do to the variolous, or any other exanthematous eruptions, when these meet together. In some epidemics the exanthema has been prevented from showing itself by the disease passing so rapidly from the sthenic to the putrid state, that it has not had time to make its appearance.

If we examine the accounts of the numerous epidemics that have appeared at different periods, we find that the constant character of this contagious febrile affection, with its peculiar eruption, has been almost invariably the same,—for although some authors may not have described the disease so clearly as others, yet we shall always trace the leading features to be similar. Thus some of the writers use the term *petechiæ* in describing the eruption, when it is evident from the character of the fever, and the nature of the cutaneous affection, they evidently mean the contagious *exanthema*.

I might here proceed to illustrate the character of this petechial fever from various authors, from Valleriola, who describes well this disease, as it occurred in Upper Italy in 1505, down to our modern writers. But I shall merely mention the names of some of the authors who have written on the subject. Besides that of Valleriola and others already mentioned, we notice the works of Coyttarus, Andrea Treviso, Roboretus, Petrus de Castro, De Haen, Ramassini, Sagar, Hildenbrand, Morgagni, Dacianus, Sarconé, Rasori, Frank, Giannini, Buffa, and Barzellotti, in all of which the character of the fever is mentioned as being sthenic, requiring more or less of blood-letting at the beginning, having often associated with it inflammatory symptoms, and occasionally accompanied with critical hemorrhagies. The eruption made its appearances in all the epidemics mentioned by these anthors from the 3d to the 7th day. De Haen says "respondeo criticas petechias dari testantibus authoribus gravissimis, Fracastorio, Foresto, Diemerbroeckio, Sydenhamio, et cæteris; verum observari dumtaxat adventante aut vigente febre pestilentiali." Hasenohrl has given one of the best histories of this fever, when describing the epidemic at Vienna of 1757-59, while he relates at the same time the inflammatory fever which prevailed in 1760, which was of a different character.

Sydenham in his *Schedula Monitoria* describes it as a contagious fever accompanied with inflammatory pneumonic symptoms, with such spots as are termed miliary eruptions, that come out all over the body, appearing much like the measles.

Palloni quotes the history of a malignant epidemic that was brought into Tuscany by Spanish troops in 1732, in consequence of these having been confined in the ships; it communicated itself to many of the attendants in the hospitals, and continued through Tuscany till 1736. Likewise the epidemic that raged at Florence in 1767, where the eruption was a prominent symptom. The disease arose spontaneously among some of the poorest people, who had long suffered from starvation, and who inhabited close and filthy dwellings. The same author has mentioned several striking instances of this fever appearing in some situations, in consequence of the crowded state of the localities. "In the year 1801," says Dr Palloni, "an eruptive fever of a malignant description appeared in the Military Hospital at Florence, among the soldiers who were much crowded, in consequence of the windows being imprudently shut to exclude the cold. It destroyed a great many of the sick, and if speedy measures had not been adopted, it must have spread over the city." Dr Palloni having been appointed by government to superintend their cure, was himself attacked with the disease. It was remarked that no case of contagious fever was observed among the sick, who were labouring under various disorders, till the external air was excluded.

In another instance this physician saw precisely the same kind of fever develope itself among a company of manufacturers of charcoal, who, to the number of 40, had collected themselves together in an empty warehouse in Leghorn. The place was confined, damp, and deprived of free ventilation, and it being winter, they had kindled little heaps of charcoal in several parts. They were all taken ill, almost at the same time of this eruptive fever, characterised by the severest symptoms, which proved fatal to many of them. The disease was in this instance also prevented from spreading by strict quarantine regulations.

In December 1806, a Felucca arrived at Leghorn, with 84 French conscripts, besides 12 other persons. The whole had been perfectly healthy on embarkation; but the ship was so small in proportion to their number, that the health of the passengers was already suffering on their coming into port. "Suspecting," says Dr Palloni, "what the consequence might be after being thus shut up in so close a place, I refused to admit them to pratique. They were accordingly conveyed to St James' Hospital—a large well-aired building under the quarantine laws. Almost immediately they became indisposed to the number of one-third of the recruits. The remainder were re-shipped on board the same ship, and were landed at Porto Ferrajo in the Island of Elba, where they communicated the disease to the inhabitants." The fever was of the eruptive kind, and of a virulent description. Dark spots followed, with delirium, and great prostration of strength, convulsions, and fatal hemorrhagies, and the most malignant symptoms. The greater part of the soldiers died, and the disease was communicated to many of the attendants.

I have given an account of these instances of spontaneous contagious eruptive fever more particularly, because Dr Palloni considered the severe epidemic of 1817, to which I shall presently refer, to be of the same character. "I have ascertained," says Dr Palloni, "after the most attentive inquiry, that the nature and form of the eruption are always the same, not only in the actual epidemic, but in all the cases of exanthematous eruptive fever produced by contagion, and are opposed to the spurious symptomatic appearance which sometimes accompanies fever of a putrid or malignant character; and the fever may either arise sporadically, or become epidemic, and extend over a whole province; and I unite with Burserius, Rubini, Cera, and others, in considering the fevers of prisons, ships, &c. as under the same denomination, and of the same nature and origin." I perfectly concur in the sentiments here expressed, and I am decidedly of opinion that this fever is most distinct from the common remittent, or gastric, or simply nervous fevers.

The epidemic alluded to, which I had ample opportunities of seeing at Leghorn, commenced in February 1817, in consequence of crowds of poor people flocking into the cities and larger towns in search of provisions, which had for a long time been so scarce as to occasion much distress among the lower classes, extending even to the mountain districts. The fever, it was remarked, made its appearance first in those houses that were situated in narrow streets and close confined parts of the town, where the miserable mendicants had collected together, in a state of much depression of body and mind; and from these localities it spread over the whole country.

From the cases which fell under my own observation, the disease resembled closely the contagious fever usually prevalent in this country—from its mode of invasion,—the great and often sudden prostration of strength—the tendency to inflammation of some internal organ, especially of the cerebral and pulmonary systems,—the irritative sthenic character of the fever,—the hard contracted and frequent state of the pulse at the beginning,—severe headach and giddiness—flushed countenance, throbbing of the temples, suffused watery heavy state of the eyes, with a dull stupid intoxicated expression,—the tongue white in the centre, or yellow with florid tip and edges.

The skin generally hot and burning, and studded with an exanthematous papillar eruption, which commonly made its appearance from the third to the sixth day; and seemed essential to the disease. Hemorrhagies sometimes occurred at this stage with relief to the symptoms. One patient had copious hæmoptysis on the third day, and the eruption had then covered the whole body. The character of the fever was decidedly that of an exanthematous disease, and of a remittent type. It frequently passed through its course in a simple form, that is, without being complicated with any local affection, but it was also often associated with inflammation of some internal organ, and the cerebral and pulmonary systems were most commonly attacked, the latter chiefly during the cold weather, when such disorders were prevalent. The abdominal viscera were also liable to be involved, and hepatic lesions and derangements were more frequent than in this country, and in such cases the skin had a deeper tinge, the tongue was of a deeper yellow, the urine darker, and the alvine dejections more bilious. In the course of the disease the fever lost its remissions; and was observed occasionally to pass into the ataxic, adynamic, or putrid state. The pulse, which had become more soft and undulating on the developement of the eruption, was now more frequent, feeble and sometimes irregular, the eyes more suffused, the face more flushed, the tongue dark, dry, and tremulous, and covered with a brown or black crust, subsultus, tremors and convulsions supervened, involuntary discharges of the alvine or urinary secretions, or the total suppression of the latter, the alvine evacuations dark and fetid. Hemorrhagies sometimes occurred in this state, and were almost always fatal. On dissection traces of inflammation were frequently found in some of the viscera, particularly in the brain and its investments. But such morbid appearances were not considered the *necessary* effects of the operation of the contagious principle in the different organs, and depended much on individual idiosyncrasy, or even the particular season of the year, for many passed through the disease without any severe local affections whatever.

Parotis was observed by some practitioners, particularly in the latter stages, and retrocession of the febrile eruption increased the cough and fever.

It was remarkable the effect which the cold and damp weather had in increasing the disease, and this has been observed also by Sarconé and others; and it may be here noticed, that although, as in the epidemic at Naples, *intermissions* even of the febrile action sometimes occurred, yet this circumstance is to be ascribed either to a want of vitality in the individual constitution, or to the virulence of the principle of contagion, or both united, rather than to any influence of climate, for not only did the fever occur in this type where malaria is not found to exert its influence, but the very state of the weather or season which increased so much the severity of the fever was always known to destroy the poison of marsh effluvia. That a certain atmospheric influence does prevail in the low countries in Italy, even during the winter, so as in some degree to affect the character of various febrile diseases, I must allow, and this may account in some degree for this fever assuming more decidedly the remittent type than in this climate. But the circumstance of cold weather increasing the eruptive fever, and destroying the other, should be sufficient to distinguish this fever, independent of its contagious nature and peculiar eruption, from any species of fever arising from marsh effluvia. In the course of the previous autumn, even unto the beginning of the winter season, when remittent fevers prevail so much in Italy, particularly in the low parts of the country, I had occasion to see the difference of type betwixt these and the eruptive fever which followed so close after it, and I can assert that the diseases were perfectly distinct in some of the leading features, and most certainly I never saw then or since any case of remittent fever communicated by contagion.

The epidemic I have said commenced in February. It continued to increase in virulence and to spread rapidly till the month of June, when it began gradually to decline, and finally disappeared in September or October. The police regulations contributed much in arresting the progress of the disease, and the hot weather assisted also in extinguishing the contagion, at least I remarked the number of new cases, both in private practice and in the hospitals, sensibly diminished as summer heat advanced.

In addition to the authors whom I have already quoted, I may refer also to the following, who have observed this eruption, Valentini of Rome in his Institutiones Medicinæ Practicæ, Pringle in his work on Diseases of the Army. Dr Barker gives an accurate description of the exanthema in the second volume of the Dublin Transactions, and Dr Alison in his excellent paper on the epidemic fever of 1827, published in the 93d Number of this Journal. Andral, Louis, and Chomel have also noticed them. In examining the histories of this eruption, as recorded by these French writers, it is obvious that Andral mingles this exanthematous affection with petechial spots, and we observe that the eruption occurred later in the disease in the greater number of the cases related by them, and that the exanthema was less numerous than in the cases noticed by us, and by the greater number of the authors whom we have quoted. But this circumstance may be ascribed in a great measure to the diarrhœa, which we find was an almost constant symptom in these cases, and it is besides possible that when this fever is complicated with severe gastric or gastro-enteritic affections, this peculiar distinctive character of the fever may be somewhat obscured.

Soon after my return from the continent, my attention was more particularly directed to the subject, from observing the same kind of eruption in several cases of typhous fever which fell under my care. From this time I prosecuted the inquiry, and took occasion to examine the patients in the fever wards of the Royal Infirmary, and in the houses of the lower classes, and after two years observations, I have found the character of the eruption, the period of its appearance, and other symptoms, to correspond very closely with the description already given.

When I saw the patient before the seventh or eighth day, the exanthema was more or less clearly marked, and even in some of the cases that I did not see till the ninth or tenth day it was still visible, either alone or more frequently mixed with petechial stains. I very rarely failed in discovering it in those patients I saw in their own houses, for there I had a better chance of seeing them early in the disease. The exceptions were chiefly children under ten or twelve years, in whom, as I have said, the exanthema frequently does not appear at all. In some adults also it was so scarce as to be readily overlooked, and in such cases as well as in children the disease was altogether of a milder character. I noticed that there were fewer cases with profuse or copious efflorescence than I had seen in Italy, and that in the greater proportion it was less vivid, and confined to the epigastric and abdominal regions, the sides, and back. This circumstance may be owing to the disease not being epidemic, and Dr Alison, in the paper already referred to, observed it in those seasons when the fever prevailed most epidemically. Like the eruption in other exanthematous diseases, I have seen it of different degrees in the same family. Thus I have noticed one or two with pretty exuberant eruption all over the body, the face and hands excepted, two or three less numerous, and one or two with very few or no papillæ at all. But almost always the other symptoms corresponded in severity or mildness. I have also remarked the exanthema to be evanescent, appearing in one part of the day, and receding in another. I have likewise seen cases occasionally, where the interstices of the skin betwixt the papillæ were covered with an erythema like scarlatina, uniting the different parts of the eruption with each other. In these cases there is greater suffusion of eyes, a more florid state of the tongue at the tip and edges, and the redness extends to the *fauces* like in mild cases of *scarlatina*, and there is also desquamation of the surface. The period of duration of the eruption I have found to be much the same as I had observed it elsewhere. It generally continued elevated from three to four days, sometimes longer. When moderate or less vivid, it commonly disappeared without leaving marks that were very discernible, but in the more exuberant stains were left in place of the papillæ, and when petechiæ appeared it was generally after the eighth or tenth day, the period when the eruption disappears. But I have observed the petechiæ earlier in the disease; and then the two eruptions existed together; but they were quite distinct from each other, and I have never seen the febrile exanthema change character so as to assume a dark or livid appearance, although accompanied with petechial spots. As the exanthema disappeared the marks which remained have, like the other parts of the skin, become livid when *petechiæ* were present, but I have not observed this change as long as the eruption preserved the papillar form. I can suppose it possible, however, that in some epidemics, such as occurred at Naples in 1764, when the adynamic or putrid state advances so rapidly, there may be cases where the whole system may be wholly involved in a state of dissolution before the usual period of the sthenic stage has subsided.

I shall now proceed to the consideration of the sources from which the contagious principle that produces this disease is supposed to originate; and I may observe, that, in illustrating the character of the fever itself, we have already anticipated in some measure the history of the causes which generate this specific poison.

Thus we have seen that the contagious fever is produced in certain confined situations or localities, where many individuals are shut up together for some time, without a sufficient renewal of fresh air, and that this state is aggravated, if the individuals be badly clothed, dirty, and have suffered from scarcity or bad quality of provisions, and from much bodily fatigue or mental distress. And we have found that in renewing these circumstances we renew the formation of the contagion and its special and constant effects on the animal economy when thus exposed; and as these circumstances must have existed in every age, we may conclude with Hildenbrand, Palloni, and others, that this specific disorder has been coeval with the human race; and that it has under different names depopulated many countries, and at various periods. Many authors from very remote periods have related to us the histories of epidemics which have occurred in various times, all proving that it is generally in such situations, and under such circumstances as we have mentioned, that this contagious fever has commenced, and become a source of diffusion, even when there was not the least idea of the fever before in the country.

Passing over the more ancient writers, as Diodorus Siculus, Livy, and others, I shall refer to the petechial disease recorded by Carlo Galli, that occurred after a famine towards the end of the 16th century, and laid waste the whole of Lombardy, and again in Tuscany from 1763 to 1767,—also the epidemic at Paris, which Poupart compared to the pestilence at Athens. Likewise the famous plague at Milan, which was evidently the same fever, mentioned by Tadinus, which was produced by several thousand mendicants, who had crowded into the city in a state of starvation. The government, in order that these distressed people might be immediately provided for, and the inhabitants relieved from such a number of beggars, ordered them to be sent to a large convent or reclusory, when very soon such a pestilence arose from the crowded state of the apartments, although they had been all previously in good health, that it was thought proper to allow those who were free from the disease to return to their homes, to prevent them from receiving the contagion. But through them the disease was conveyed to whole families, both in the city and neighbouring villages, and a vast number of the population was destroyed.

Hildenbrand enumerates the epidemics that were produced in the military hospitals by the retreat of armies;—and Palloni gives instances of the pestilential fevers which happened at various periods in some parts of Italy. A very destructive epidemic fever followed a severe famine in 1505, and extended itself all over Tuscany. The same happened in 1511, by which, between Florence and the surrounding country, more than 30,000 people perished. Again, in 1528, 1550, and 1554, the petechial disease after a great scarcity, and consequent crowded state of the population, destroyed in Tuscany upwards of 100,000 individuals. The famine of 1630 renewed the same afflicting scene; and Pistoja suffered a loss of 12,000 of its inhabitants in 1629, 1648, and 1649, in like manner after a famine. We have also the well-known dreadful epidemic of Naples in 1764, so ably described by Sarconé, to which I have already referred. "The multitude of miserable beings," says that writer, "wandering from city to city, presented in every part a spectacle of sorrow and desolation. The inclemency of the weather, the scarcity and depraved nature of the provisions, the very idea of insurmountable misery,—the natural filthiness of the wretched people,—the absolute want of means of changing their linen and clothes, which had become excessively filthy, and saturated with an offensive effluvia,—their continual wanderings and fatigue;—all could not fail to alter the state of the blood of these people, and to generate in their constitution this fatal disorder, which is commonly the consequence of famine and misery."—"It was in the month of April," continues Sarconé, "that Naples was besieged by these starving and famished crowds. The mob or lower classes were the first to be attacked with the fever, and of these, the strongest and most vigorous in preference to the more feeble. And in the hospitals where the people had accumulated and were shut up together, the disease began to give unequivocal symptoms of its existence, and of its putrid nature. During this month the disease passed from the habitations of the poor to the houses of the wealthy, the better orders, and the respectable classes; and it was observed to be most common in those streets that were most frequented. In the month of May it became general, and the more elevated situations, where the air was most renovated, were now with difficulty exempt from the contagion."

I have given the above statement of Sarconé more fully, because the origin, the nature, and progress of that epidemic, and the season in which it occurred, resemble so nearly in description the contagious epidemic which I had an opportunity of seeing in Tuscany in 1817, with this difference, that the Neapolitan fever assumed in a greater number of cases, and to a greater intensity and facility, the putrid type; and also that I might take occasion to express my decided opinion, that the latter epidemic was not produced by malaria, as may be alleged, in consequence of some of the cases being of an intermittent character. This, we have already remarked, depended on other causes, and I may observe, that the situation of Naples itself, and the season of the year, must be sufficient to refute the notion of this epidemic being the product of malaria, independent of the rapid manner in which the disease spread among the population.

Forestus tells us, that in his days the pestilence was most frequent at Cologne and Paris, and refers the same to the multitude of the inhabitants, and filthiness of the streets. I might adduce many more instances of epidemics being produced on the continent under such circumstances, but I will only refer to Dr Barker's Medical Report of the Fever Hospital in Dublin, where many similar facts are quoted from various sources, as establishing the point of war and famine being generally followed by epidemic fever, chiefly in Germany and France.

We have many instances in our country of contagious fever arising from persons being confined in close apartments without a sufficient renewal of air; the well-known fevers that appeared at Oxford and London in 1577 and 1750, in consequence of prisoners being long kept in their cells without fresh air, and change of clothes.

Lord Bacon has particularly mentioned the epidemic that happened in London in 1577, and remarks on the cause of fever, "that the most pernicious infection next to the plague, is the smell of the jail, where the prisoners have been long, and close, and nastily kept, wherein we have had in our time experience twice or thrice, when both the judges that sat upon the bench, and numbers who attended the business, sickened upon it and died."

Pringle has given us an account of contagious fever arising in the army from the same cause at Newcastle, Litchfield, and Inverness, in 1745. In describing the contagious fever that appeared in the camp at the latter place, he says, "In consequence of the precautions that were taken, and the greater care to divide the sick, some time passed without any infection, when an unforeseen accident rendered the infectious fever more general and fatal than had been at first apprehended; for about the end of May, Houghton's regiment, with three more, had been sent as a reinforcement, landed at Nairne and joined the army; a few days after twelve men of that corps were sent to the hospital of fever; but on bleeding them largely, as for *common fever*, then prevailing in the camp, the pulse sank and some had an uncommon stupor. It was then concluded that it was a contagious fever, that had arisen from the confinement and bad air in the ships during the voyage, yet it was not understood how this battalion, and none of the rest who sailed with it should be so sickly. But upon further inquiry it was found, that the fever came directly by infection from the true jail distemper in the following manner. Not long before, a French ship had been taken on the coast of England, on board of which some troops had been sent to assist the rebels, and amongst them a few English soldiers, who, in Flanders had gone over to the enemy. These deserters on being taken were thrown into jail in England, where they were kept till the opportunity offered of sending them by the transports to be tried by a court martial at Inverness. They were thirty-six in number, and having brought with them the jail fever, they gave it to this battalion with which they happened to be embarked. In three days after coming ashore, six of the officers were seized with it, and the regiment in the few days they were quartered at Nairne left about 80 sick. In the ten days following, while in camp at Inverness, they sent to the hospital about 120 ill of the same fever, and though the virulence of the distemper diminished afterwards in their march to Fort Augustus, and from thence to Fort William, yet that corps remained for some time sickly.

"The symptoms of the jail fever were in every point like those of the hospital fever; that as they were formerly only conjectured to be the same distemper, they were now proved to be so. Being thus introduced, it soon spread, not only in the hospitals, but among the inhabitants of the town, whilst the ordinary camp disease after the beginning of May, sensibly declined both in violence and number."

Again, "while in camp in the summer, they had no other accommodation for the sick than a few huts in the neighbourhood; apprehending, therefore, bad air, as many as could be transported were sent to Inverness, and by this precaution the hospital fever was retarded, but not prevented. For when the sick multiplied these infirmary huts were much crowded, the air vitiated, the hospital fever broke out, and became fatal.

"When this was joined to common inflammatory disorder, a mixture of the two arose, which produced some perplexing cases from the indications of the cure being so contradictory."

I have given these extracts fully, as they bear on the contagious or non-contagious nature of the common and jail fevers, to which I shall afterwards refer.

Lind ascribes the production of contagious fevers on shipboard to want of ventilation by keeping the hatchway shut.

Mr Hooper has given us an account of the contagious fever that appeared among the troops that were landed in England after the battle of Corunna, owing to the crowded state of the transports. I might here multiply quotations from various authors on the subject, but I shall merely refer to the works of Willis, Grant, Huxham, and particularly to Dr Barker's Medical Report of the Fever Hospital at Dublin, to which I have already referred.

That such are the chief sources from which the contagious principle arises that propagates those pestilential epidemics which from time to time have been so destructive to human society, it is so very evident, that they need only to be named without entering into a minute inquiry. But I now allude to them more particularly, both with the view of establishing as clearly as possible the fact, that the contagious fever which has appeared so frequently on the continent and in this country, is exactly of the same character as the continued contagious fever usually prevalent, and which has become endemic among us, and also that it always proceeds from the same source. And this is of importance; for in a country such as Italy, where febrile diseases arising from other sources abound so frequently, a combination or unity of these might be expected to exist; whereas it is surprising to find how distinct the eruptive contagious fever maintains itself from all other febrile affections.

But it is to be observed, that it is not merely the collecting of many individuals, whether healthy or otherwise, in closely confined localities that will produce the miasm. I agree with Hildenbrand, Palloni, and others, that, if there be a renewal of fresh air to a certain degree, this contagious principle will not be produced; for it is sufficiently obvious, that, if a proper ventilation of fresh air has the faculty of checking the property of the contagion even when in full activity, the same circumstance may not only render it inert when produced, but actually prevent the human body from acquiring that condition which is necessary to generate the poison.

This circumstance alone,—I mean the greater degree of ventilation which some localities enjoy over others,—when individuals are collected in similar situations, and where it may be expected there could be no immunity in one place more than others from the production of this specific contagion, will very much, if not altogether, account for the absence of the disease in some localities, when every other circumstance might seem to favour its origin. There are other reasons why this disease may not manifest itself in such situations. Temperature alone will operate in this way; and accordingly we find in hot climates this contagious fever is either wholly unknown, or, if it should ever arise, it will be immediately extinguished by the heat. Even in more temperate climates this disease is sensibly diminished during the summer season both in virulence and frequency; and this is observed in the very localities where the fever was known to exist previously with much malignity. This may be partly owing to the freer admission of air at this season, but chiefly, I apprehend, to the heat itself.

Again, while we have already remarked that cold and damp favour much the generation and diffusion of this contagious principle, we have reason to believe, from the circumstance of the disease being so little known in the more inclement regions, that intense cold will operate in the same way as great heat in preventing or checking this contagion. In this respect its character resembles the plague, to which, indeed, the disease bears a strong affinity. There may be also a certain atmospheric influence or constitutional idiosyncrasy which should affect the rise and spread of this miasm, just in the same way that we observe other exanthematous diseases to be retarded by such influences.

I am aware that such facts as I have adduced regarding the source of this contagion have been considered by some of a negative kind only; and that in many of these situations which I have mentioned, such as prisons, hospitals, ships, &c. this fever is often not found to exist. I apprehend, however, that the various circumstances which I have mentioned have not been sufficiently considered as counteracting agents in such cases; and we cannot deny the fact, that in those situations, and particularly under the circumstances we have mentioned, this disease has been uniformly found to arise and propagate itself. But we are to observe, that famine and misery are to be considered as concurrent causes only by rendering the human constitution more liable to receive it; for, as Dr Barker states, "as long as the poor are kept separate while labouring under a want of provisions, they are not much liable to fever; but as this state obliges the poor to crowd within narrow limits in small lodgings, and by bringing a number of persons within the infected circle, it augments the risk of infection, and diffuses contagion." And Dr Percival remarks, that a permanent cause of fever among the children in the Bedford Asylum, existed in the noxious atmosphere of their crowded dormitories, and an occasional or exciting cause in the vicissitudes of the weather.

Assuming that the specific source of the disease is an emanation from the living human body, which acquires a quality fit for its generation when placed under certain circumstances, we find the disease is either partial, if proper precautions be taken to prevent its diffusion, or general, if these are neglected, and the accession of concurrent causes be added. In large towns we may have the fever commencing in different points, and be either sporadic or endemic, as we commonly see it in this country, or more extended by the application of the accessory causes now mentioned.

We do indeed meet with sporadic cases of real contagious fever in situations where none of the usual reasons for its appearance could be assigned; but in a country such as our own, where the disease is constantly to be found, we can readily account for the spreading of the contagion among individuals in more comfortable circumstances. And we have also seen that the contagion may be conveyed even to a distance, and so be communicated from one part of the country to another;—it may then only appear at first in a sporadic form, and after a time become epidemic. In this manner Rasori mentions the petechial fever to have been introduced from Nice into Genoa in 1799 by some individuals. It remained insulated till the spring of the following year, when it assumed an epidemic form.

We shall next examine whether, among the order of fevers, there may be found any other fever that is capable of being propagated by contagion, than the disease we have been describing. These are fevers of an idiopathic nature, produced by cold, or changes of the season, gastric or bilious fevers, all *malaria* fevers, particularly those of the remittent and pernicious types. Also low nervous fevers produced in certain constitutions, but without the usual marks of contagious fever.

It is generally admitted that all such febrile affections are not contagious as long as they preserve their simple primary character; but if they assume the adynamic or putrid type, they are then considered by many to be of a contagious nature Allowing that any of these fevers, as the gastric or bilious remittents, in themselves not contagious, might, when converted into a putrid state, so charge the air of an apartment with septic particles as to communicate a putrid disease to others, especially when an attendant approaches very near the patient,—I am convinced that if this were possible, the disease so produced would not be propagated in the same manner as one of a contagious nature, such as an exanthematous disease; and that, should even these contagious diseases, the small-pox, scarlatina, continued fever, or the plague itself pass into a putrid type, the disease so changed, or complicated, will not communicate the original disease more readily on this account. Nay, I am of opinion that the faculty of diffusing the specific contagion will thereby be diminished, inasmuch as this very putrid state of the system must tend to weaken the very contagious principle itself, the activity of which must depend on a certain vitality of the system, which putridity assists in destroying,—for we know that putrid animal matter will not of itself occasion fever, nor shall we find that any of the exanthematous diseases will, when they become putrid, produce any other febrile affection than the original disease, and as I have observed, even this faculty will be weakened by the diminished vitality of the system.

In regard to the bilious or gastric remittents, properly so called, the low nervous fevers, or simple febrile affections, becoming contagious when they are converted into an adynamic or putrid state, I can say, that during many years residence in Italy, where such diseases are so prevalent, I never saw them propagated in this way; even when accompanied with *petechiæ*, hemorrhagies, and the most putrid symptoms, although the friends and nurses were in constant attendance; and I also observed that fevers of this nature always stopped with the recovery or death of the patient, and I could adduce observations from various authors in support of this fact. Indeed, during the long period that I had opportunities of observing these febrile diseases on the continent, I never found any fever contagious, except the eruptive petechial fever of which we now treat. And these remarks will be found to apply also to similar diseases in this country.—I would here refer to the works of Hasenohrl and Rasori for observations on the common and contagious fevers, and to the quotation which I have given from Pringle in another part of this paper, as illustrative of the difference betwixt these two species of fever.

The fever which arises from marshes, or in those places where malaria is generated, we must consider as entirely local, and very distinct from contagious fever, and can never be communicated in the same way.

I have endeavoured to trace the history of the petechial contagious fever, which has been the subject of our inquiry, and I trust I have shown that such a disease has existed from the earliest ages,—that the fever is of a peculiar type, similar to that of exanthematous diseases, and particularly, that it is accompanied with an eruption as distinct and specific as any other *exanthema*, and which should be considered as pathognomonic of the disease,—that it is produced by a miasm, or poison *sui generis*, and is capable of propagating itself like other contagious diseases.

In bringing our observations to bear on the contagious fever of this country, we shall find that the leading characters of the petechial disease, and the sources from which it flows, are very much the same with those of our typhous fever. The sthenic or irritative sthenic type of the fever early in the disease,—the tendency to the asthenic and putrid state towards the latter stages,—the sudden and great prostration of strength,—the condition of the tongue and eyes, and the expression of countenance,—the constant invasion of the cerebral and pulmonary system,—and particularly the exanthematous eruption which always accompanies the fever, are characters common to both. This eruption has been already noticed occasionally by some practitioners in this country when the fever became epidemic, but, as I have stated, I have found it as constant as any exanthema of other eruptive diseases, and during two years of attentive inquiry, I have found the contagious fever of this country to correspond very closely in the above characters,—with the difference, that the exanthematous affection is less profuse in a majority of the cases. This may arise from the disease not being epidemic at present, for it is then much more distinct and copious. But the character of the eruption, and the period of its appearance, are still precisely the same. Dr Lorimer, Physician's Clerk in the Royal Infirmary, who has assisted me for a year and a-half in examining the fever patients on their admission, informs me, that he has observed the exanthema in every case, with a few exceptions, when the patient was brought into the hospital before the 8th day of the fever.

The epidemic that spread over Italy in 1817 was considered by many practitioners to be an exanthematous disease; and it was observed that very few experienced a second attack of the fever. Some practitioners are of opinion, that one attack of *true* contagious fever will in general secure the person against a repetition of the disease,—like some other eruptive fevers; and that even in those cases where it has appeared a second or a third time, which, I believe, has been very seldom, every succeeding attack has been of a milder character. We trust that this important point will be established by future investigation.

In communicating these observations I offer them as a subject for further research; and should these characteristic features be confirmed by others, and prove the contagious fever of this country to be an exanthematous disease, the advantages resulting from the decision will be too obvious, both in a diagnostic point of view, in defining more clearly the characters of Contagious Fever, and likewise as regards the method of cure.

Art. VIII.—*On Diseases simulating Acute Inflammatory attacks of various important organs, and dependent on Ganglionic or Spinal Irritation.* By John Torbet, Esq. Surgeon, Paisley.

The class of cases, of which the two following are examples, has hitherto formed no part of the system of diseases illustrated and explained by medical teachers, or described by systematic medical writers. The information which has generally obtained concerning them has been vague and desultory, so that the histories of them which have from time to time been given, have failed to make on the medical public that impression which, from their importance, they are so well entitled to do.

These histories have been seldom or ever minutely detailed; their violent and contradictory phenomena defied classification, or reference to *one* diseased organ; in short, under such titles as "Anomalous Cough," "Curious Case of protracted Sleep," "Protean Malady," &c. they have been published as *extraordinary cases*, deemed curious enough, indeed, but little thought of by practical men, till perhaps some violent and embarrassing case, occurring under their own eye, arrested attention.

The very name of nervous diseases creates prejudice, and the boasted cures and frequent occurrence of extraordinary cases in the hands of professed *spine doctors*, by exciting the jealousy, or the incredulity of their brethren, have alike operated in preventing this class of diseases being considered as falling within the ordinary range of professional study. But it is time that medical men should be familiar with, and prepared to distinguish such cases when they meet with them, so that if they cannot always speedily remedy, they may at least save themselves the anxieties and chagrin of pursuing a wavering and aimless practice, and their patients the suffering arising from ill-directed efforts.

Neuralgia, a term which I use as synonymous with spinal, ganglionic, or cerebral *irritation*, may attack any part of the nervous system, from the minute fibrils spread on the organs of sense, to the great nervous centres. The two cases subjoined I regard as examples of the phenomena occurring when the centres of the system are attacked. In attempting a general outline of such diseases, it is vain to look for any thing like unvarying regularity of symptoms. We know nothing of the exact morbid condition giving rise to the symptoms. It may be of various kinds; and, besides, in so delicate and complex a tissue as the nervous system, we may easily conceive, the many modifying and controlling circumstances, that cannot fail to occur, in each individual case, when that system becomes the subject of morbid irritation, and thus vary the external phenomena. But though systematic exactness be out of the question, it is still possible to give something like a characteristic outline.

Of the diseases in question females frequently before, sometimes after, puberty are the most usual victims. The individuals are of what is called irritable constitution,—a peculiarity, moreover, in some instances, distinctly hereditary, and connected more or less with strumous diathesis.

The morbid train of neuralgic symptoms is most usually set in operation either by a serious inflammatory or febrile disease, by excessive fatigue, or by injury, as from a heavy lift or severe fall. The severity and variety of diseases to which the individuals appear to be liable might almost characterize the affection. You are astonished to hear of their violent illnesses, the powerful remedies that are applied, and the rapidity with which they shake off these attacks. In severity, their diseases resemble those of no other person. They are paralytic, blind, speechless, without food, and without sleep for weeks or months, and yet they do not *die*.

Is the *head* the organ affected? They have headach, of which no words can convey an idea, ending perhaps in insensibility, or there is a heavy weight pressing down their eyelids, a tight bandage compresses, or hammers beat within their head, bells ring in their ears, vertigo and sickness overpower them, noise and light disturb them.

Is the *chest* affected? A sepulchral cough, each fit of which seems to threaten existence, over which medical art seems to possess no control, harasses from morning till night, and night till morning. There is excruciating pain in the chest, especially during the cough, which is perfectly devoid of expectoration. There is a feeling of swelling and choking at the under part of the neck, tremendous palpitation of the heart; the pulse is quick and agitated, but varying greatly with the severity of the cough; and the heart's pulsations seem to occupy the whole left side of the chest.

Is the *digestive apparatus* the seat of disease? Then ensue vomiting without apparent cause; incessant retching for hours, occurring perhaps every day for weeks, without any thing being vomited; no appetite; unquenchable thirst; occasional severe pain in the belly, or muscular cramps; and costiveness alternating with diarrhœa,—the stools unaccountably copious.

Are the *organs of voluntary motion* the parts attacked? There are then cramps, prickling or numbness, sometimes severe spasms, liker tetanus or hydrophobia than any thing else, ending possibly in catalepsy, or paralysis of one or more limbs ensues.

Such is an epitome of the symptoms of the more violent cases; but almost endless variety must of necessity occur, according as the several nervous centres are affected and their affections modified, by individual circumstances. It is precisely from this variety and anomaly of appearances that practical men are apt to be misled. The most marked symptoms are apparently so distant from, and unconnected with, nervous irritation, and are moreover so violent and similar in their character to pure inflammatory diseases, that there is great risk of our chief curative efforts being directed to the appendages, and coincidents instead of attacking the disease itself.* It is in this point of view that I think the subjoined cases instructive, and that I have ventured to solicit for them insertion in this Journal.

Case 1. Miss —— aged 15, a young lady of precocious growth, had in the summer of 1831, an attack of cough accompanied with hoarseness, which had rather a threatening appearance, but which gradually yielded.

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* Here I may be permitted to state my opinion that the cases from the Edinburgh Medico-Chirurgical Society, which appeared in the Edinburgh Medical and Surgical Journal for April last, and are styled respectively "Anomalous affection of Respiratory Organs" "A peculiar convulsive affection of the respiratory organs," "A remarkable case of sneezing," were neuralgic cases, and might have been sooner cured, and appeared less *anomalous*, had attention been directed to the nervous system.

In the month of October of the same year, she had a severe attack of typhous fever, in the course of which she had a bad cough. Soon after the fever she had an attack, which seemed inflammatory, in the hip-joint.

About the middle of February 1832, she began to be affected with palpitation of the heart, cough, and difficulty of breathing, with frequent pulse. These symptoms were conceived to depend on disease of the heart. The treatment resorted to consisting of blood-letting, general and local, blistering, digitalis, rest and low diet, afforded considerable relief, but failed effectually to remove the complaints. In autumn 1832, the family took up their abode in Paisley, and in October of that year, Miss —— became my patient. I had been prepared to find her in delicate health, but she looked well, and was very unwilling to consider herself an invalid. It was apparent, however, that her sitting up cost her an effort, her breathing was quick and short, her pulse very frequent, and the cough very troublesome. The means used at this time were purgatives, digitalis, black drop, squills, leeches and blisters, and yet with very little effect on the cough. The cough, which was thus so obstinate, was not accompanied with the least tendency to expectoration. It had a harsh ringing, whizzing sound, and caused pain in the fore part of the chest, with palpitation, often accompanied with a feeling of swelling and sense of suffocation in the region of the great vessels, at the bottom of the neck. Baffled hitherto in my attempts, I deemed it necessary to try something more active. At four different bleedings from the arm from the 3d to the 9th November, inclusive, between 50 and 60 ounces of blood were abstracted. These bleedings produced no feeling of faintness, the blood was neither cupped nor buffed. At every repetition relief was given, but only temporarily.

On the 5th of November in the afternoon, she was seized with retching, which continued without intermission two hours. This retching was attributed to the effects of opium, of which she had been taking large doses. In spite of my efforts the cough persisted. With the exception of a little respite after the dose of black drop, it continued day and night, a hollow, barking, dry cough quite *sui generis*, from its incessance and violence, alarming me with the idea of a large blood-vessel bursting in the lungs, and thus rapidly closing the scene. The pulse was quick and irregular, the appetite almost gone, thirst great, sleep little or none. Still she had not an emaciated appearance, her eye was lively, her tongue clean, and her bowels open.

At this juncture I proposed a consultation with Dr B. of Glasgow. When we met on the 12th, Dr B. considered the case one of diseased heart, approved of the treatment hitherto pursued, hinted at the possibility of even further blood-letting, and, on the whole, had a very unfavourable opinion of the case. He suggested an open blister on the chest, two grains of *Ext. Conii* three times a-day, to be followed, if unsuccessful, by a graduated trial of prussic acid. Early in January 1833, I wrote Dr B. as follows.

" The cough, which at the period of your visit was so frequent and distressing, has now in great measure disappeared. The pain in the breast and palpitation have so much diminished that it is only in answer to a direct question occasionally put to her, that I at all hear of them, and then she says they are both greatly better. The pulse not steady, the cough, when it does occur, invariably quickening it.

"To compensate, however, for this agreeable change, she has now to contend with fits of severe headach, ending in retching, which have of late occurred almost every second day. After hours of increasing headach the retching commences, a violent convulsive effort at vomiting occurring every few seconds for generally two hours, absolutely nothing being ejected.

"As to treatment the pills of *conium* seemed to have no effect. The hydrocyanic acid was accordingly soon substituted, till in graduated doses she took at length five drops three times a-day. The issue on the breast is still kept open. Draughts of soda water, with a little brandy and a full opiate in the form of a pill, are the means I use to check the retching, and I persuade myself I do good, when I occupy her mind by forcing her to talk on indifferent subjects. The other parts of the treatment are a two-grain opium pill every night, a dose of quinine three times a-day, head shaved and kept cool, perfect rest in bed, and attention to the bowels."

In answer Dr B. chiefly suggested a trial of *Ox. Bismuth* instead of the quinine.

About the end of February I again wrote Dr B. as follows. "Miss —— I am concerned to say, is still in a very unsatisfactory state. The cough has disappeared, and so has the pain in the chest and palpitation. She cannot, however, lie with comfort on the left side. The headach and retching obstinately continue. I have given the bismuth a full trial without benefit. I have established an issue behind the ear. A severe pain in the belly has of late been troublesome. When the headach, &c. are present the pulse varies from 96 to 120, at other times it is nearly natural. Catamenia nearly regular."

Iodine and Dollar water (a powerful chalybeate) were tried in succession at this time.

About the end of March she had a fit of *toothach*, which, like all her other ailments, was unusually severe, and ended in severe headach and retching. These attacks of toothach have occurred frequently since, and, convinced as I was that they were a mere symptom of more general disorder of the nervous system, I have notwithstanding been obliged to extract five or six teeth, to afford at least temporary alleviation from suffering, which seemed more than even her patience could bear. All the teeth were more or less decayed.

About this date the metastatic nature of the symptoms led me to imagine, that possibly the complaints might originate in irritation of the spinal marrow. I had her out of bed, and examined minutely the whole vertebral column. The whole back generally was tender and extremely weak, it costing apparently a very painful effort to sit upright. There was a tendency to a twist in the lumbar region, depending evidently more on muscular debility and irregularity of action than positive distortion. In the dorsal region she complained of pain on pressure, and to my inquiries, whether she had particular uneasiness there on coughing, or whether there was darting pain proceeding thence to the chest, she seemed to think there was.

I immediately had her laid as nearly horisontal as possible on a firm mattress, leeched, cupped, and then I established a caustic issue at that part of the back.

The issue was kept open till the beginning of May without any decided effect on the symptoms; for although the cough often during that period much abated, it was in most cases a mere substitution of headach, and retching, or toothach for cough, or *vice versa*. During this period the other parts of the treatment consisted in full doses of black drop,—twenty, twenty-five, or thirty drops twice, and when the symptoms were urgent three times a-day. As she took little or no food she had a little wine, as circumstances seemed to demand.

The first week of May the cough again began to be distressing; for a few hours in the morning it was moderate, it became aggravated as the afternoon advanced; and during the evening, and all night till morning recurred, it continued with unabated violence. To give an idea of the frequency of the cough I have often distinguished six distinct paroxysms of cough with a few seconds intermission between each, in the course of a minute. This constant coughing aggravated greatly the pain in the chest. The only effect of the black drop was to produce a little temporary respite, and to make her feel more comfortable

On Saturday, the 5th of May, the cough was incessant and violent beyond measure. In despair of any thing else relieving her I bled her from the arm. When she had lost about four ounces of blood she complained of being sick, and I immediately tied up the vein. The bleeding was followed by a large blister round the upper part of the nape of the neck (meaning to be near the origin of the phrenic nerves) and a full dose of black drop. She had a quieter night, and for a day or two the cough was more moderate. On the 17th the headach and retching returned—the cough was less urgent and severe. At this date the pulse was 72, when undisturbed by cough. She could not lie on her left side on account of cough and palpitation. No œdema, urine natural. She is cheerful when free from suffering; no complaint of great debility, her countenance and expression of eye lively. In this state of matters a history of the case was sent for consultation to a physician of high and well-earned reputation in Edinburgh.

In reply he stated, that, although he had seen cases resembling mine, yet he felt at a loss what to advise. Of the cases he had seen some, he said, had sunk after protracted suffering; others had got well he could not say how or why. He then, without citing the work, referred to a number of cases, a detail of which will be found in the 17th volume of the Edinburgh Medical and Surgical Journal, in a paper entitled "On Coughs resembling *Phthisis.*" As to treatment he suggested a course of tonic and purgative medicines so as not to act on the bowels too much; failing these, extract of *Stramonium*, *Colchicum*, and then Nitrate of Silver. Cold sponging of the chest and spine, followed by friction, a succession of blisters to the upper part of the spine, leeches to the larynx, and lastly, the attemping to get her out of bed, and gradually to the open air were also recommended.

The very day after I received this letter, Miss —— was seized for the first time during her illness with spitting of blood. The matter spit was not pure blood; it had the appearance of serum tinged red, and containing a few small *coagula* of blood. She complained of the old catching pain in the chest. This important change in the case necessarily prevented the recommendations of Dr—— being carried into effect, and indeed they had already been so fully tried before that I had but little hope from them.

A blister to the breast, with the internal use of *Tinct. Digitalis ex Infus. Rosar*, were ordered.

June 26th. She has frequent diarrhœa, the bloody expectoration continues. In what was examined to-day, there was a small clot of blood, and a little frothy mucus mixed with the bloody serum. The pulse when undisturbed by the cough was natural. Six leeches to the breast; continue the mixture.

27th. Last night at midnight spit more blood then ever. I saw a clot as large as a tablespoon would contain. This clot was not brought up by a cough, but after coughing a great deal she felt something impeding her respiration, and raising her head, the clot at once came up. On inquiring into the state of her bowels I was shown a large feculent stool rather costive.—Two calomel and colocynth pills.

28th. In addition to the medicine already in use, I ordered a pill containing one-third grain of sugar of lead every three hours; the blister kept open, cool air, and cold sponging.

29th. She has spit a considerable quantity of blood, which coagulated on cooling,—pulse natural and soft. Continue.

30th. No spitting, a large feculent ill-digested and offensive stool, of a yellowish colour.

July 1st. More bloody spitting.

4th. No bloody expectoration, a bright hectic flush on the right cheek, pulse 80, when undisturbed by cough.

On the 14th, I ordered six leeches, and on the 15th, commenced the use of stramonium in doses of one grain of the powder.

On the 17th, I have noted as follows. The stramonium has not as yet produced any decided effect. She has, however, complained of great restlessness, and last night of a feeling of weight and choking at the breast. The cough last night was quite of a different character, short and hacking, not shaking her nearly so much; no expectoration during the day or yesterday, and what she spit last night was blackish, as if it had been sometime extravasated. Continue the stramonium.

21st. Six leeches to the chest.

22d. Pulse quicker, with a decided feeling of firmness and hardness; the hemorrhage from the lungs continues.—She was bled from the arm to two teacupsful, the blood flowed freely.

Evening.—The pulse softer, with relief of the symptoms. The blood taken buffed.

23d. During the night the bloody expectoration has returned as bad as ever. I saw at least a teacupful in the basin in which she spit; complains of weight and oppression at the chest; pulse 100, and hard; bowels rather threatened with diarrhœa. She says she felt much relief from the bleeding yesterday. I bled her again to eight ounces. In the evening she was again bled to the same extent.

24th. The blood taken yesterday cupped and buffed; no hemorrhage from the lungs during the night; feels easier to-day: bowels still open.—A blister to the breast.

Evening. Since mid-day she was much distressed with severe pain in the chest, impeding breathing; and which came on suddenly. In the afternoon she spit a little florid blood, which coagulated on cooling; pulse at least 120, but the incessant cough renders it difficult to number; the cough now of a short hemming character. A similar quantity of blood was again taken from the arm. Continue the digitalis.

25th. Still complains much of pain in the chest, with a feeling of choking; pulse 120; cough very frequent; no hemoptysis.—Repeat the extract of stramonium pills one-third of a grain every four hours.

Evening. Considerable hemoptysis during the day.

26th, Evening. To-day has had severe headach, followed by retching, *little cough,* and *no hemoptysis*; pulse 120, unsteady and weak.

During the day she has had twenty drops of black drop every four hours.

27th. Hemoptysis this morning; pulse as before; pain of breast still severe.

28th. Pulse 112, and more distinct. To-day I attempted an examination with the stethoscope, as indeed I had done frequently before, but the rapid breathing and loud palpitation of the heart rendered it no easy matter to make exact observation. Continue the black drop.

Evening. Complains of a throbbing pain in the head, which has been present more or less for two days, attended with giddiness on raising herself; both pain and giddiness are relieved on lying down.

29th. The hemoptysis returned this morning; little or no fibrine in the matter expectorated. Continue the black drop.

30th. More hemoptysis to-day. In the matter expectorated there is a small fibrinous clot with air-vesicles on its surface, and along with it a piece of caseous-looking matter, of the size of a barley-corn. I noticed these appearances the more particularly, that I apprehended the hemoptysis to be the precursor of tubercles breaking up, and in this way considered the case as well nigh hopeless.

For a week or two after this date I have no reports. The hemoptysis continued to recur at irregular intervals, sometimes with as much violence as ever. As to treatment, I now trust mostly to cool air and the black drop.

August 17th. Vomited to-day after one of her headachs a quantity of fluid blood; complains of pain and oppression in the chest; skin hot and feverish. I again bled her from the arm. It is just three weeks since the last bleeding. She was then menstruating, and the *catamenia* are again present.

18th. Blood still cupped and buffed. There is, however, a much greater proportion of *serum*. Feels relief from the bleeding.

On the 23d August, at 11 P. M., I was sent for express to visit my poor patient, and found her in perfect agony from incessant retching, accompanied with very violent cramp of the muscles of the belly. The parietes of the abdomen felt absolutely as hard as board, and the *recti* muscles could be distinctly traced in a prominent ridge, from the sternum to the pelvis. This state of suffering had lasted for several hours. Heat and friction, with a draught containing extract of stramonium and æther, afforded relief.

24th. She is easier.—Continue the Stramonium mixture every four hours.

25th, 11, P. M. Again sent for, and again found Miss —— suffering under an attack precisely similar to the one I have described. The agony was extreme. The same means again after a time afforded relief, but it was three hours before I could leave her.

On the 26th my friend, Mr Stewart, saw Miss —— with me.

On the 27th, at 11 P. M. the paroxysm of vomiting and cramp again recurred, and, as I was anxious Mr S. should see Miss —— when her suffering was at the height, I took him with me. At 2 A. M. of the 28th, I was again sent for, and found Miss —— suffering as much as ever. In talking over the case with Mr Stewart, he advised perseverance in the use of the stramonium, and a prudent trial of mercury, with the intention of carrying it the length of affecting the mouth. This plan was immediately acted on, by ordering Miss —— a blue pill every morning.

30th. The cramps and vomiting still continuing to recur, an opium plaster was applied to the epigastrium.

September 6th. Stramonium leaves in powder in doses of two grains every eight hours, substituted for the extract. The blue pills continued. For the first fortnight in September this treatment was diligently followed. At one time, from threatened confusion in her head, and a peculiar feeling in the throat, the stramonium was discontinued, but after a day or two it was cautiously resumed. The stools at this period were daily examined. Mr S. was astonished, as I had been before, at the quantity of feces which were passed. Often there was half a chamber-potful of solid feces, loose and ill-digested, yellow, granular, and very offensive. This quantity of feces it was difficult to reconcile with the small portion of food she took. She never took a regular meal. The small quantity of food she took seemed to pass through indigested and unreduced in size.

September 22d. The pills having produced no tenderness in the mouth, a drachm of strong mercurial ointment was directed to be rubbed in every night. There is a troublesome diarrhœa. The stramonium was left off. For some days after this date, the cough was urgent, the bloody expectoration continued to recur, the vomiting and cramps persisted with great obstinacy, and were followed by toothach, headach, pain in the hip and knee of the right side, the side formerly affected.

On the 28th of September, Miss —— complained for the first time of a feeling of faintness while at stool.

On the 30th, I noticed her pulse more feeble, but on inquiring if she felt faint, she answered "No." During the afternoon she complained of faintness, apparently connected with the loose state of the bowels. About four P. M. she fell into a kind of *swoon* or *trance*, and lay many hours in that state; with the pulse 120, and distinct; the breathing very soft; her eyes sometimes open, sometimes shut, refusing to look steadily at the light, and rolling when that stimulus was applied to them. Touching her or even pinching her seemed to cause no sensation.

At times she appeared in a degree conscious,—would ask for a drink, and drink freely; but for the most part, she lay with the most inanimate expression of countenance, with nothing but feeble respiration and circulation, to mark she was living.

In this condition, without the least vestige of *cough, hemoptysis, cramp*, or *indeed any of the painful symptoms* which up to the occurrence of the trance had been so distressing, she lay till October the 4th. On the afternoon of the 4th a retching fit occurred; she lay the whole evening in a very distressing state of low sickness, seemingly having no power to retch. With this she had frequent ineffectual calls to stool, and what made these efforts truly painful at every attempt she made to gain the upright posture, which she was desirous to do, she fell back insensible into the arms of her attendants.

Friday, October 11th. Since last report little change has taken place. There have been indeed many changes in the external phenomena, *e. g.* convulsive startings, and contractions of the muscles of the extremities and neck, twitchings of the muscles of the face to a great extent, now moaning much, now still as death, at other times sobbing and weeping, at times great difficulty of swallowing, but the main characters of the cataleptic condition continue unchanged. She has not uttered a sentence for thirty-six hours, pulse 120 to 130. This morning had two dark bilious stools. These last days she has frequently micturated unconsciously.

October 18th. Some days ago some oranges were sent her; the moment she smelt them, she gave evident signs that she desired them, and as soon as the pulp was put within her lips she sucked it very greedily. She has since ate a great number with great avidity. A bit of salt fish was offered her lately, and since she has eaten it often with bread and butter. In short, her appetite rather requires restraint at present. These last days the hemoptysis has recurred sometimes with, and sometimes without, cough. For two or three nights back, there has been a pretty smart febrile exacerbation, with flushed face, and quick and panting breathing. She has not yet spoken, but contrives by signs to make her wants pretty well known.

October 19th. On her mother entering the room, she said, "Mother, mother, I can neither hear nor see." Her perceptions so far as touch goes are remarkably acute. By a kind of instinct she seems to distinguish the individuality of each person. She has more than once fallen into hysterical sobbing when a person she does not choose persists in offering her drink. The last three weeks seem to her to have been passed in a long but very painful sleep. She complains that she is in constant suffering. To-day she asked for some of the biscuits which had been sent on Saturday, referring to some biscuits which had been sent her two days before she fell into the trance. In the evening she said she was weary, and requested some black drop; for it will be observed, that since the occurrence of the cataleptic state that medicine had been discontinued. Indeed, during the state referred to, little treatment had been attempted. Her bowels were regulated by simple enemata—her strength supported by a little wine and water, when she would take it, and occasional beef-tea injections.

October 25th. Since last report there has been considerable hemoptysis, she complains much of weight and tightness in the chest, and appears to have some confusion of ideas as to the cause of it, as evinced by the occasional exclamations, "Oh remove that weight, Oh don't hold me so tight." She lies constantly with her left hand pressed against the left side of the chest, where the open issue was. Pulse for some days much calmer, varying from 94 to 104, and 112, the *breathing*, on the contrary, very rapid and *panting*, with a kind of metallic clinking sound, as if there were a valve low down in the windpipe. When she sleeps, however, she breathes with perfect calmness.

November 21st. Since last report the most distressing symptom has been toothach. It came on about the 10th, and for the last days was very severe, causing her to cry and sob like a child for hours. Nothing seems to relieve it. Extraction is out of the question. Since the toothach appeared her other symptoms have much *abated*, the cough almost gone, the spitting very much diminished, the *panting breathing* quite vanished.

Her intellectual acuteness she has quite regained, and can follow short sentences when written slowly on the palm of her hand. She remains perfectly deaf and blind. The trances are again threatening to recur. She passed the whole of yesterday forenoon in one of them. Since the reappearance of the swoons, the toothach has diminished, and she has complained of a sensation in the head, which she calls *pain*, in contradistinction to her headach. This pain has been accompanied with confusion and giddiness.

On the evening of the 23d, she had a violent nervous attack, sobbing and crying greatly. From this state she recovered, and then detailed to her mother a vision or dream, to which, as it influenced for a time the external phenomena of her disease, I may shortly refer. She imagined that she saw a young female relative (at the time on her deathbed) dead in her coffin, and afterwards in Paradise, and that she had a long conversation with this imaginary being, who urged her to come where she was, assuring her she was far happier than she had ever been in the world, &c.

In a day or two after this occurrence she began to start in bed as if in fright. These startings continued for weeks. Her attendants had generally some warning of their approach, by her beginning to speak aloud, or mutter. At other times she asked for a drink of water. Before they could get it to her she might be cataleptic. Breathing very softly, then muttering a little, her respirations becoming more rapid, and, without farther warning, she springs up, exclaiming " Oh let me go," or " I wish to come, but they will not let me." As soon as she is upright, her head droops,—she falls back motionless,—lies a few minutes, then rubs her eyes, yawns, and exclaiming " where have I been," is at once restored to a perfect understanding of her actual condition. These phenomena occurred with great frequency. The black drop is still continued. She guesses the time for her dose almost to a minute. She says it *prevents* that disagreeable sleep, and likes it in full doses. She never starts out of a natural sleep.

December 2d. This morning, when the six o'clock bell was ringing, she put her hands to her ears, and asked what dreadful noise that was. She was told it was the bell*. She replied no. It is much louder than the bell, and held her ears. When the bell ceased she removed her hands.

December 20th. This afternoon, the hearing, which since the date of the last report has been progressively improving, returned perfectly. She had a long conversation with her mother, in which, among other things, she asked what had been the matter with her, whether she had again had fever, and whether Miss B. (the subject of the dream) were *dead*, and *when* she died. The startings have disappeared—the swooning fits are still frequent; they vary in duration from a quarter of an hour to one or two hours. They come on with a feeling of faintness, ringing in the ears, and vertigo. She knows when they are coming.

The cough is again very troublesome, with the old pain in the chest. Little or no sleep; pulse 112 to 120.

January 6, 1834. The cough continues; the panting breathing is again at times distressing; she sleeps *none* unless a very little in the morning; bowels regulated by a daily enema; the quantity of feculent matter passed enormous. Twenty drops of the black drop every four hours. Since she recovered her hearing she has been persuaded to use a bed-pan, and now the swooning fits are not nearly so frequent. Every time she raises her head from the pillow one of them occurs. For a day or two she had pain in one of the eyes, and yesterday and to-day she has complained of the light being offensive. She as yet cannot distinguish any object; the appetite very irregular and capricious; there is occasional hemoptysis, but to a trifling extent.

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* It will be observed that these answers were communicated by writing on her hand.

February 9th. About the 25th of January the vision of the right eye was perfectly restored; she is quite blind in the other. Her general state continues much the same; the external phenomena are constantly changing. Since last report, for instance, she had symptoms strongly resembling coma, from which a blister roused her wonderfully. I can almost predict a swooning fit from extreme rapidity of the pulse. During the swoons, too, instead of breathing smoothly, she now pants in them, and breathes with extreme labour. She comes out of them with a cough. There was yesterday considerable hemoptysis.

February 20th. Several weeks ago Miss —— cried one day to her mother that she was losing the power of her limbs, and that she had no feeling when she pinched them. I heard nothing of this circumstance till two days ago. On inquiry it turns out that, ever since the date mentioned, she has occasionally had feelings of numbness in the legs. They are now nearly insensible; she, however, has still power over the muscles. Along with this state of the limbs she complains of pain in the back extending to the chest. On examination there is considerable pain and tenderness in the dorsal region near the seat of the former issue; between the last dorsal and the first lumbar vertebra, there is a feeling of a depression and severe pain on pressure. The swoons continue, and while in them she is now found pressing with her hand this part of the spine.

The *catamenia* have returned for the first time since August last.

February 27th. Since last report the tender part of the spine has been several times leeched and blistered; care too has been taken to have every part of the back resting on the firm mattress on which she has all along lain. The want of feeling extends from the hips to the toes, and is complete. She has now, too, lost all muscular power over the limbs.

March 3d. This evening I was hurriedly sent for, and learned that, about 7 P. M., she had suddenly cried out, "Mother, my arm is getting numb," and when I saw her at nine she was quite without feeling from the fingers to the shoulder of the left arm. She could move it as well as ever.

March 12th. To-day I formed a caustic issue at the tender point in the lumbar region.

April 8th. Since last report has been afflicted with violent pain under the left mamma, which repeated and copious leeching and other treatment has failed to remove. She has also had repeated shiverings, once followed by profuse perspiration; she has complained too of pain in the throat, where one of the tonsils seems as if eaten.

19th. For some days sensation has been gradually returning along the inside of the arm and palmar face of the fore-arm and hand. To-day she has a little power of the fore-arm.

Since the 10th she has been using *veratria* ointment, at first of the strength of five grains to the half ounce of axunge, and then ten grains to the half ounce. It has been rubbed both on the seat of pain in the breast, and along the spine. It has produced the peculiar tingling sensation in the skin, *but has never produced any effect on the pain.* She says herself the only thing that relieves it is the hemoptysis, which has been occurring more or less almost daily. The cough too has continued frequent and very distressing.

To-day (the 19th) at two in the morning, was seized with one of her *old headachs,* with a sensation as if she would retch. Since the invasion of the *headach* she has not *coughed* once; pulse 92.

May 28th. Since last report the cough and spitting have again been the troublesome symptoms. The spitting is always during the night, then too the cough is most troublesome. The blood spit up is very thin, like blood and water. Of late there has been a constant hectic flush, the cheeks as if painted with carmine. The pulse and general heat of surface moderate. To-day the pulse is 84, regular and soft.

Since last report I have given acetate of lead a full trial. I carried it the length of two grains every six hours, following each dose with a spoonful of vinegar. It has had no effect on the hemoptysis, and severe pain in the belly occurring, I have intermitted its use, and have since been going on with tincture of digitalis. I am very attentive to keep her room cool and freely ventilated.

She has quite recovered the feeling and use of her arm. I have established another issue in the loins, which discharges freely. There is as yet no return of feeling or power in the limbs. The swooning fits are less frequent. She takes no food, so that of late she has been sustained by beef-tea injections.

I had been long desirous to have Miss —— into the open air, and if possible into the country. But the hemoptysis, the paralytic symptoms, the swoonings, and her many other ailments, threw so many impediments in the way that it seemed almost impossible to accomplish it. The family were anxious to pass the summer in Stirlingshire. Once there I was persuaded Miss —— would benefit by the change, so that after a good deal of hesitation I resolved to sanction the journey. As the slightest elevation brought on the swoons, a board was procured with a firm mattress on it. On this Miss —— was laid at full length, and so carried into a spacious coach, permitting her to lie at full length.

We set out on the 12th June. During the journey she had many swoonings, but on the whole she bore the fatigue better than I anticipated.

During the first part of her residence in Stirlingshire she suffered greatly from a succession of such symptoms as have already been detailed; but I need not enter into particulars. In autumn she had begun to be carried out in a kind of litter every day. She had gradually (at first at the rate of a drop a week, for a more rapid diminution increased the number of swoons,) left off completely the use of the black drop, and her distressing complaints, though *none* of them removed, were on the whole alleviated.

The only circumstance I think it important to mention is, that, soon after her arrival in Stirlingshire, Miss —— after coming out of a cataleptic attack of thirty-six hours duration, complained of the pain of the back extending to the neck; that this pain continued; and that, in a letter I received shortly before she left, it was mentioned, that Miss —— had discovered that pressure on the painful part of the neck caused a swoon.

On the 25th October 1834, Miss —— returned to Paisley as before in a carriage; and bore the journey pretty well.

She was cheerful, and had the appearance of one in good health. The swooning fits had of late been occurring twice a-day; the cough troublesome; the hemoptysis occasional, sometimes severe; she had menstruated with surprising regularity; her bowels quite regular; her sleep very little. During the journey she had fourteen swoons. The power and feeling of the legs restored.

For a fortnight after her arrival the swoons were very frequent. She lay in these perfectly inanimate; her breathing hardly perceptible; her pulse, however, distinct and about 96. She said the swoons were always preceded by a dart of pain in the neck, and that it was this pang that occasioned them. I have often watched the recurrence of these attacks. A start as if from pain is the invariable precursor, and immediately she is off in a state of total insensibility. After lying a longer or shorter interval, she comes out of them with a cough. I once requested a note of them to be kept, at a time when they were occurring with unusual frequency. From mid-day till midnight she had twenty-four, the time she continued in them varying from five to twenty-five minutes. When she is out of the swoons she *yawns* incessantly. On examining the spine, as soon as I touched in the gentlest manner the vicinity of the fourth and fifth cervical vertebræ, a swoon was immediately the consequence. The rest of the spine pretty free from tenderness: the seat of the issues in the back and loins not at all tender.

In the beginning of December she was seized with a catarrh then epidemic. This was followed by aggravation of the cough and hemoptysis. In the treatment black drop was at first trusted to, then *digitalis*, then superacetate of lead in doses of two grains, increased to five grains, followed as before by a spoonful of vinegar every eight hours, and continued at this last dose for many days. The acetate of lead produced no *sensible effect whatever*. At length *digitalis* and black drop seemed to procure alleviation. The quantity of bloody fluid spit amounted to six or eight ounces during the night, and perhaps about four ounces during the day. This fluid was dark purplish in colour, not separating into coagulum and serum, and of a streaky appearance at the bottom when poured from one vessel to another. Diluted with water and filtered, what remained consisted of a few small coagula. On boiling the filtered liquid, a large portion of albumen coagulated, carrying with it the red globules, leaving a nearly colourless fluid.

Towards the end of January 1835, I had a number of blisters applied in succession to the nape, which seemed to relieve the cough, and had a decided effect in lessening the swoons. I resumed also the use of mercurial friction, and persevered in its use till April, mostly twice a-day, without *rendering the gums in the least tender*, or producing any constitutional effect, unless excavation and diminution of the tonsils be reckoned such. She still retched all the food she took.

I had been for sometime desirous to establish a caustic issue at the tender point of the nape. She was very averse to this measure, but at length she was persuaded, and I accordingly formed it on the 10th of March. I used caustic potass in a state of deliquescence, and applied it in the gentlest manner, with a camel hair pencil. She could not have borne it to be rubbed on. Before the 1st of April, a very decided amendment had resulted from this issue. The swoons occurred with much less frequency, the cough was moderated, and the spitting for some days had disappeared. The issue in the nape, however, had not been many days formed, when the old pain in the region of the heart recurred with all its former violence. During the swoons the old panting hacking respiration reappeared; and formed a strong contrast to the calm placidity in which she lay in the swoons previous to the recurrence of this pain.

Repeated blisters to the *dorsal vertebræ removed this pain,* and for a few days she was remarkably well, looking well, in good spirits, and even retaining the little food which she took.

This agreeable change did not long continue. About the 24th of March she was seized with violent cramps in the muscles of the belly, followed by retching of precisely the former character. Pressure on the lumbar vertebræ caused extension of pain round the belly; there was evident fulness of the integuments of this region, and she even complained of weight, numbness, and want of power in her legs. Repeated blisters failing to relieve her, on the 29th March I established a large caustic issue at this part of the spine. This issue removed completely the cramps, and in a great measure the threatened paralysis of the limbs, but after this improvement the pain in the chest again recurred, accompanied with a threatening of paralysis of the upper extremities. I almost wished I had let *nature alone.*

I could not propose a third open issue in the back, nor did I think it advisable; for, granting that I could *chase* the irritation from the spine, it might only be to lodge it in the head or ganglionic system, and thereby renew sufferings which experience had told me I had it so little in my power to remove. I tried to palliate, therefore, by strong ammonia liniments, mustard poultices, &c. applied to the back, and the internal use of anodynes. I did not succeed in quite removing them, but I moderated her sufferings, and during the month of April she certainly much improved. Her best days she would be for many hours lying at full length on a sofa in the drawing-room, taking a swoon occasionally—while other days she was in bed, from headach, toothach, or some other ailments. Both the cough and the hemoptysis had greatly abated. She was taking a little food and retaining it much better. On favourable days she had the appearance of a person in good health.

On the 29th April, she was again removed to Stirlingshire, and of course was removed from my professional care. Subjoined I give by letter a sketch of what has occurred since, and her present condition; for I have had no opportunity of seeing her since she left Paisley.

" August 11, 1835. You really would be astonished were you to see your patient. She certainly is very much better in every respect. She has had no *hemoptysis* for five weeks, and then it was during a menstrual period. The pain in her chest is much as it was, that is to say, when she coughs. She has only had one swooning fit during the last four weeks. Indeed ever since we came here, they have been gradually wearing off. She has only had three headachs since we came, one slight attack of retching, with cramps, no toothach, no pain in her neck, except when she has headachs. She is able to sit in a chair for more than half an hour at a time, and has resumed her practice on the piano. She drives out twice a day, four miles at a time, and really eats and sleeps like other people, although a little irregular in the times of her meals. She seldom or never takes black drop. She took it twice last week, by my advice, on account of being threatened with bowel complaint, but now she has rather a *dislike* to it. The issue in her neck is quite open; the one in her back is almost healed up, but she has no pain in her back. Of late she has complained more of the palpitation at her heart than any thing else. Dr J. has not been here for some days, so that of her pulse I can say nothing."

CASE 2.—Fifteen years ago Mrs —— in the act of descending a stair missed a step, so that she fell backwards with her whole weight on the spine. Intense pain, followed by insensibility, were the immediate consequences. In this state she was carried to bed, and lay long inconscious, and even when she began to recover her senses and to see, did not for some time recognize those about her. A large inflammatory swelling took place at the seat of the injury, and paralytic symptoms of the legs followed. Local bleeding and other appropriate measures were adopted; but she had a severe and long illness. She, however, at length to all appearance quite recovered, and for some time enjoyed good health.

About ten years ago Mrs —— was threatened with a return of numbness and paralysis of the legs. The medical gentleman who at that time attended her suspecting the seat of the former injury to be the source of the symptoms, traced in a general manner, and above the clothes the course of the spine. The moment he touched the part formerly injured, she screamed out there were thousands of needles in her arms and legs, and would have fallen to the floor had she not been supported.

This discovery was followed by a very severe illness, but as at this time I did not see her, and as, moreover, she has since had similar symptoms under my own care, I need not dwell on this part of the case. The only circumstances I think it important to notice are, that a pea issue was formed at the part of the spine affected, but which produced such intolerable pain and irritation, that it was obliged to be immediately withdrawn, and that ever since she has scrupulously taken care that the injured part of the spine has not been touched; and that whenever by accident it has been touched, pain, numbness, and paralytic symptoms have invariably followed.

In November 1830, Mrs —— was threatened with abortion. This indisposition was succeeded by a violent, hard, and sounding cough, to which she is at times liable. The cough was removed by anodynes. Early in January 1831, Mrs —— had occasion to be in Edinburgh, and left home quite well. She had hardly reached Edinburgh, however, when the cough returned, and she came home on the 12th coughing much. On the 15th, finding the cough very troublesome, and that it shook her severely, I advised her, although the pulse was nearly natural, to lose blood, and I bled her to twelve ounces.

January 17th. The cough was so much relieved yesterday, that she thought she might leave off the black drop, which by my direction she had been taken at bed-time. She had in consequence a worse night, coughing much. To-day she complains much of the severity of the cough, and of pain darting across the belly; pulse 80. I proposed again to bleed her. As she was preparing to go up stairs for this purpose, she was seized with one of the severest fits of cough I ever witnessed; the pain like a knife darting through the belly. In the midst of this paroxysm she was seized with numbness in both arms, which alarmed her greatly. "What shall I do?" she cried. I got her at length up stairs, and in about half an hour bled her to four large teacupfuls. She was now in bed, and I gave her ten drops of the black drop. This was at 3½ P. M.

5½ P. M. The blood taken buffed; cough but little relieved; pain of belly when coughing agonising; pulse 80, full; *respirations fifty in a minute.* She lies panting and every attempt at a full respiration brings back the violent cough. I bled her again to three teacupfuls, and gave her eight drops more black drop.

9 P. M. Cough greatly relieved, in a measure gone; she feels easier; breathing much more calmly; pulse 90; tongue clean and moist; thirst at times considerable. There is a spot of considerable extent, under the umbilicus acutely painful to the touch, but only so when touched; blood still buffed. Ten drops black drop at bedtime if necessary.

January 18, 10. A. M. Has passed a quiet night without the black drop; pulse 90; cough almost gone; the same spot of the belly still acutely sensible; no stool.—Eighteen leeches to the pained part of belly; two teaspoonfuls of salts.

18th. 7 P. M. Leeches bled freely; feels better, but the part of the belly mentioned still very painful when touched. At the part of the abdomen where the pain is situate, the fundus of the enlarged uterus can be felt, and this indeed seems to be the seat of the pain. She cannot bear the slightest pressure here; the weight of the bed-clothes is distressing. Pulse rather rising, now 98, and not at all weak.

I raised her to the upright position, and bled her to faintness, which occurred when three large teacupfuls had been taken. She lay faint a good while. Cold cloths applied to the abdomen.

11. P. M. Is better in every respect, with the exception of the pain, which continues fixed, and as severe when touched as before; the slightest touch causing her to scream. She has felt sick once or twice. The blood is still buffed, but not so much as at first; the pulse 100; the faintness quite gone. Embarrassed hy the obstinacy of the symptoms, I requested another opinion, and at midnight Dr M'Kechnie visited Mrs —— with me. In consultation Dr M'K. said, that he thought depletory measures had been carried far enough; that from the want of general tension, and the circumscribed nature of the pain, that he was of opinion there was not now inflammation going on. We ordered a starch injection with a teaspoonful of laudanum, and a warm poultice to the belly.

19th. 10 A. M. Has passed a completely restless night; poultice oppressive from its weight; has been faint, and vomited once or twice, (most probably the effects of the laudanum, which at no time agrees with her;) pulse 100; the pain just as before. Still under the apprehension of peritonitis, I was inclined to apply leeches to the seat of the pain; but as depletion had already been carried a great length, we agreed to delay, and in meantime we ordered a diaphoretic mixture.

4 P. M. Has been quite easy till within half an hour, that she has complained of sickness from the mixture; has had one stool feculent and natural; no thirst; pulse 86; belly still acutely tender, but hardly so much so as before.

10 P. M. The pain is less acute on pressure; pulse 90; complains of headach. We advised cloths to be applied wet with an ether lotion.

20th. 10 A. M. No sleep, the smell of the ether sickened her, and in vomiting the darting pain of the belly was as acute as ever. It went off, however, in half-an-hour. The pained part of the belly can to-day be touched with much greater freedom; pulse 100; tongue moist; no thirst; no stool. She still complains of pain in the head. A saline purgative was ordered.

4 P. M. Pulse 92; has had during the morning several flushes of heat, alternating with feelings of coldness, especially in the feet; one stool.

9 P. M. Pulse 84; there is decidedly less tenderness of the belly; headach severe; no sleep; urine high-coloured; two stools. I gave her twelve drops of the black drop.

21st. 10 A. M. No sleep; headach less severe; pain of belly less; no appetite.

9 P. M. Pulse 84; once or twice during the day had a feeling of

sickness; no stool; no thirst; tongue clean and moist; urine high-coloured. Fifteen drops of the black drop.

22d. 10 A. M. Another sleepless night; headach continues; feels exhausted and wearied; pain of belly still diminishing. This morning had at the under part of her back a very sharp pain, which, however, did not continue long; pulse 90; no stool; no appetite; urine high-coloured and sabulous.

A tea-spoonful of magnesia, followed by a castor-oil injection, were ordered.

9 P. M. Pulse 80; three natural stools without the injection; was sick in the afternoon, and in retching, the darting pain of the belly recurred with all its former violence; the urine turbid and sabulous; headach very severe.—Discontinue the black drop.

23d. 10 A. M. Pulse 90; a better night, having at different times slept a little; two stools; urine as before; the headach continues, but is principally complained of on moving.—A little beef-tea.

8 P. M. Pulse 86; headach severe, is easiest when the head is low; there is great giddiness on moving it; light is offensive, and noise so much so, that at one time during the day she requested every one to leave the room; no sickness; tongue clean and moist; liked the beef-tea.*

24th. 10 A. M. A better night; headach relieved; no stool; urine as before; free from pain in the belly; pulse 96.

℞ *Ext. Colocynth. c. Sapon. Hispan. aa. gr.* ij. *M. ut ft. pil.* ij. *statim S.* Chicken-broth.

9 P. M. Pulse 86; pressure now causes no uneasiness of the belly; relished the broth, and also a morsel of haddock; headach still severe. A teaspoonful of brandy at bed-time; repeat the pills in the morning if necessary.

25th. 10 A. M. Slept a little in the night; headach still distressing, although just now she has none; pulse 86; tongue clean and moist.—A dessert-spoonful of brandy at noon; continue the chicken broth; an enema in the evening if necessary.

9 P. M. Pulse 88; a natural stool from the pills; headach less; a dessert-spoonful of brandy.

26th. 10 A. M. Pulse 88; slept much better, and feels refreshed to-day; headach less; tongue clean.—A dessert-spoonful of brandy three times to-day; diet as before; repeat the pills.

February 2d. Since last report no important change. The headach, always present, continues at times more severe than others. This afternoon, between three and four, she became suddenly blind; she could discern the light, and a general outline of objects, but nothing with distinctness. This continued an hour and half. About 5 P. M. she was seized with a peculiar numbness, and want of sensation in the tongue and jaw, and a total want of sensibility, and she thinks motion in her left arm. During this state she pinched the left hand with the right, but never felt it. There was no one in the room at the time, but she does not think she could have spoken.

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* From this date the symptoms were evidently aggravated by a state of *anæmia*, and it will be observed accordingly, that a cautious exhibition of stimuli and light nourishment were chief objects in the treatment.

After lying a while in this state she became unconscious. From this condition she was roused just as the clock struck six. The headach was now very severe. At 9 P. M. when I saw her, the headach remained, but every other part of the attack had passed away. She said she saw as well as ever, and felt and moved as before. On my causing her, however, to look with her eyes in succession, we discovered that the vision of the left eye was quite indistinct, having great difficulty in telling the clock by my watch with this eye, while she saw quite distinctly with the other. Pulse 80; tongue clean; bowels open. I intermitted the brandy.

February 3d. A sleepless night, and much distressed with headach; bowels still open; stools feculent and deep-brown in colour; urine much clearer.

8 P. M. A good day, headach better; pulse 76.

4th. 10 A. M. A bad night, little or no sleep; severe headach; pulse 94.—Continue Brandy and diet as before.

March 2d. Since last report Mrs —— has improved but little. The black drop has been resumed, and, with the exception of one or two days, has been taken at the rate of 15 drops in the morning, and 32 at bed-time. Its general effect has been to produce great tranquillity, but so far from procuring sleep, that she thinks she lies more *wide awake* under its influence. The night before last, after having had symptoms of indigestion during the day, she took her dose of black drop at bed-time,—for the first time it produced delirium, and she passed a very distressed night. Yesterday morning she had a beaf-tea injection, containing 15 drops of black drop. She was very sick after this. In the evening she had a purgative enema, which relieved her bowels effectually; at bed-time she took no black drop, and has passed by far the best night she has had during her illness, and was quite surprised this morning when she heard eight o'clock strike.

On the whole, the headach is much relieved. The bowels have been very difficult to manage, the mildest purgatives producing violent pain. Of late I have trusted almost entirely to enemata, consisting of thin arrow-root, olive oil, and a little common salt. These have answered well.

She has no appetite whatever. A variety of tonics have been tried. Of late she has been taking sulphate of iron combined with a little aromatic powder, which promises to agree. She continues the brandy. There is a degree of tenderness about the abdomen, but unless when taking purgatives no severe pain. Of late she has had frequent attacks of a kind of languor or insensibility, in which she has at times lain for an hour or more, unconscious of what was going on, and unable to move hand or foot. Sometimes she has had a feeling as if her lower extremities were separated from her body, and the other night, in a kind of dream, fancied her head lying in a part of the bed separate from her body. Pulse ranges from 80 to 90, 80 at night, and frequently 90 to 94 in the morning.

April 10th. Since last report Mrs—— has been improving. The sulphate of iron powders have been continued, combined with *Infus. Calombæ*, and *Potassæ Supercarbonas*, and with good effect.

She still complains of occasional darting pain in the belly; her appetite still indifferent; her pulse natural. She was now able to leave her room.

16th. For a day or two, Mrs —— has not been so well, has had thirst, fever, and general uneasiness. Yesterday feeling oppressed with heat, she had the window opened, and was in this way exposed to a draught of cold air. A violent *cynanche tonsillaris* was the consequence.

20th. Since last report, Mrs —— has suffered severely from her throat. The most severe pain was at a point as low as the bottom of the pharynx. Repeated leeches afforded most relief. The pulse did not rise much, but the severe suffering continued several days.

May 8th. After Mrs —— got rid of the pain in her throat, she declared she felt herself quite a different being, that, far from being weakened, or in any degree worse of the attack, she felt more lightsome, and able to move about. The *headach* completely removed.

This improvement has not been transitory, for at this date, she continues free from *headach, cough,* and pain in the belly; pulse 84; appetite rather better. In return for this general amendment, and to show as it were the necessity of some part of the system suffering, Mrs —— has for the last ten days laboured under severe pain in the nerves of the thumb, and fore and middle fingers of both hands, especially of the right. There is neither swelling nor redness. This pain amounts at times to agony, but this degree of pain is not lasting. At the end of her last pregnancy, she says she had precisely similar pain in her fingers, which left her immediately on delivery.

July 2d, 1831. To-day Mrs —— after a very natural labour, was safely delivered of a very large child, a boy. During the labour she had one attack of the severe darting pain in the side. For several hours, Mrs —— was perfectly well. About 10 P. M., however, she began to complain of great heat and pain about the anus. This went on increasing, and about midnight, when I saw her, she was in torture. Mrs —— is a woman of great patience and fortitude, but she was now screaming with agony. The sufferings she compared to red-hot knives thrusting up the rectum. She could not micturate. In the course of the night, I applied at different times thirty leeches, gave her full doses of black drop, applied fomentations, hot and cold, but still her suffering continued. The leeches, indeed, always afforded temporary relief.

Externally there was but a very small pile projecting, but the under-part of the rectum, felt *per vaginam*, was hard, painful, and tense. In the morning, I applied a liniment, containing extract of belladonna, to the fore part of the rectum, with a view of relaxing the sphincter, for I saw clearly that the only way to relieve my patient was to promote the relaxation of the sphincter, and thereby facilitate the descent, and external projection of the swollen hemorrhoidal veins. Mrs —— has been subject to blind or internal piles for years. These were now much swollen, partly, as it afterwards turned out, from a very loaded state of the colon, and partly from the effort, and compression necessarily attendant on parturition. From the latter cause too the *sphincter ani* had been much stretched and irritated. In this condition of matters, the swollen veins acted exactly as a plug would have done if thrust, and retained within the inflamed sphincter. The spasmodic efforts of the muscle to relieve itself of this irritating cause gave rise to the suffering.* During the forenoon of the 3d she continued without relief. About 3 P. M. she was leaning on her elbow in bed in unabated torture; she suddenly stopt screaming; her eyes became fixed; I spoke to her, she made no answer, but continued staring vacantly. In this position I had her supported with pillows. She now closed her eyes, and remained quite calm; her pulse 80; her breathing slow, but distinct. With the exception of a start now and then, as if from pain, she lay in this cataleptic state for fully an hour. Soon after she came out of this state, the pain returned as severely as ever. On examining I found the pile a little more protruded, I applied eight active leeches, followed by warm dry cloths, and with decided relief. From this period (5 P. M.) she continued easier, and although not free from pain had, on the whole, a quiet night.

4th. 8 A. M. Continues easier; pulse 86; skin cool. On examining I found a projection at the anus, in three lobes, as large as a moderate sized apple.

The usual laxative treatment employed in such cases was now resorted to.

Four or five days after this date, Mrs —— complained of a very uneasy and distressing sense of distension at the under part of the gut, with costiveness. She had taken a large purgative, and had an inclination to stool, but it seemed as if something stopped the passage. On introducing my finger *per anum*, I discovered an immense impaction of hardened feces. An enema, and the use of a scoop brought part away; a second enema brought away a large lump, and smaller lumps, but still of considerable size, continued passing for several days.

After this Mrs —— slowly but completely recovered, made a good nurse, and enjoyed good health for more than two years.

Sunday, January 19, 1824. Mrs —— was at chapel this afternoon, and much distressed during the early part of the service, by a harassing cough. I happened to be in the chapel, and when the congregation dismissed, went to offer her my arm home. She told me she was now better, but that she had been very ill in the chapel; that she had lost altogether sense and motion in the lower part of her body, and her recollection more than once, and had never missed the clergyman out of the reading desk till she saw him in the pulpit. While we walked homewards it rained very fast, but she continued walking pretty firmly, till we got about half way; she then made a stand, and would have fallen, or laid herself down, had I not supported her. She appeared for a moment or two unconscious, breathing very rapidly. After remaining a few minutes in this position, the rain pouring on her, she rallied a little, and with my assistance, with difficulty walked home.

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* The above detail should render accoucheurs wary in attempting to keep swollen veins within the *sphincter ani* during labour, with a view of relieving the suffering from external piles.

After removing her wet clothes, she sat down in an easy chair before the fire, and had her legs and arms well rubbed, for she now complained of numbness. This numbness soon passed off, and she remained for a little pretty well, breathing, however, rapidly; pulse 72. Very soon she entreated her attendants to rub the arms vigorously, as the numbness was returning. These attacks occurred several times. In one of them I noticed her look wildly, her features writhe a little, and the left side of her face twitch to one side. She lay for a little insensible, and when she came out of this state, it was evident she could neither open her jaws nor push out her tongue; her speech was mumbling and indistinct, and she complained of her tongue being swelled. The heat was now restored, the pulse 76, and quite calm.

I was rather alarmed by the paralytic affection of the tongue, and, notwithstanding my former experience of her painful neuralgic affections, and the objections to large depletion, I thought it right to let her blood. I took two teacupfuls from her arm. She now walked to bed supported on each side. At nine P. M. I ordered a purgative enema, and said I would see her at ten.

Ten P. M. I found her calm, without headach or vertigo, but a little occasional throbbing in the head. When asked to push out her tongue, she half-opened her jaws; the tongue was then seen with the point pressed against the roof of the mouth, and quite motionless. The injection had brought away a feculent stool; the pulse about 80; she had not at all her natural expression, her speech mumbling, and her face twisted. Although I could not, under all the circumstances, consider this a case of ordinary determination of blood to the head, yet as Mrs —— had lately enjoyed good health, and I could not but dread the occurrence of farther paralytic symptoms, I thought it prudent to take a little more blood. I tied up the arm and let other two teacupfuls flow. I then prescribed two purgative pills.

20th. nine A. M. A tolerable night; the pills sickened her; and she retched several times; has had a free stool; pulse 72; she can push her tongue quite out of the mouth, and thinks she has moved it with more freedom since the retching. She says she is sure the bleeding last night did her good, as previous to it she was threatened with a return of numbness.

Evening. Has not been so well during the day, has had several threatenings of the numbness, and on one occasion was for a moment incoherent. The tongue is not quite so moveable, and she does not speak so distinctly; she has had one or two more stools: pulse 72. I ordered a mustard poultice to the nape and down between the shoulders.

21st. Evening. The movement of the tongue again restored. She has been excessively restless during the afternoon, apparently from the fatigue of too many visitors; pulse 72. I ordered a purgative enema, and after it a glass of wine and water.

22d. She is tranquil to-day; has had but little sleep; pulse as before. An enema, a little beef-tea for dinner, and eight drops of black drop at bed-time.

23d. Pulse 72; tongue clean, but blanched, can move it freely; the twitch of the cheek has quite disappeared; the muscles of the jaw are a little stiff; was restless during the first part of the night but had a little sleep in the morning; she says she feels *lazy*, and asked whether she might not get up and rouse herself; she has no appetite, and has had no stool.

℞ *Pulv. Sal. Rochelle* ℥iij. *statim S.*

After this date I have not kept daily reports. Mrs —— had a slow and protracted recovery; oppressed with extreme languor and inappetence, and unrefreshing nights. By rest, fresh air as the spring advanced, and a variety of expedients, which every such case requires, she gradually regained her strength, and was able to go to the country with the family early in May, and for several months was in good health.

October 27, 1834. Was hurriedly sent for to attend Mrs —— in the country. On arriving I learned from herself that some weeks ago she had a troublesome diarrhœa, which was succeeded by hemorrhage from the bowels, having often passed pure clotted blood, and that even yet there was a tendency to diarrhœa. For the last days she has had more fatigue than usual. Last night she slept ill, and got up this morning with considerable pain in the back. When I arrived about noon, I learned that this pain had been very urgent during the forenoon; but very averse to yield to it, Mrs —— had continued down stairs, and I found her in the drawing-room. She was now in great pain, and referred her suffering to the neighbourhood of the left haunch. The pulse was 120. I advised her to her room, which she reached with considerable difficulty. She got immediately into a warm bed, and I gave her ten *minims of the Sol. Mur. Morphiæ*. Still the pain continued to increase. "My back, my hands are asleep, my legs, oh rub me." Soon she complained of a violent pain darting out at her head and thereafter began to be incoherent. "Who are these, such a number of people; why did you bring them here," &c. The pain, numbness, and cramps in the legs and arms, and back were for moments tremendous; occasionally they intermitted, and then recurred with more fury. Now she was observed to fix her eyes, to sharpen her features, to corrugate her lips, to raise one arm, and point to some imaginary person; in short, she fell into a cataleptic state, panting and moaning, unless when a return of agony made her scream with suffering. I had already repeated the opiate, and as there was no relief, although I now was anxious to avoid much depletion in *this* case, I determined to try the effect of a small bleeding. I opened a vein, but she did not bleed freely, and in fact did not lose half a teacupful. In the act of bleeding, however, she roused from her cataleptic state, and said she was better. She now complained of pain in the head; a weight pressing down her eyes; and deadly sickness. I gave her ten *minims* more of the *Sol. Morphiæ.*

5. P. M. She is now suffering under violent feverish reaction; skin burning hot; pulse 120, soft and bounding; great heat of scalp; thirst insatiable. I tied up the arm and allowed two teacupfuls of blood to flow. Cold cloths to the head and cold sponging.

10. P. M. The violent fit of reaction has moderated; pulse 112, and not at all hard; blood not buffed; heat of scalp much moderated; complains of a feeling in her head as if it were firm bound; the thirst and sickness continue; she still complains of the violent pain of the back, but there has been no return of spasm or numbness.

28th. 8. A. M. A very indifferent night; headach and sickness severe; thirst unabated; pulse 108; no stool.—*Adhibeatur Enema Purgans. Applr. tempori hirudines octo. Lintea frigida capiti.*

29th. 8 A. M. Pulse 96; the headach unabated; the pain in the back now quite away; a sleepless and very distressed night; attacks of flushing, alternating with feelings of coldness; thirst unquenchable; the injection yesterday produced a stool.—*Rep. Enema; persistat in usu linteorum frigidorum et habeat horâ quâque 6ta Guttæ Nigræ* gtts. vi.

5. P. M. Pulse 96; a very distressed day, with headach; thirst unabated; the injection produced a stool of formed feces.—*Applr. Empl. Lyttæ nuchæ.*

℞ *Calomel gr.* iij. *Ext. Col. c. gr.* v. *M. ut fiant pilulæ* ij. *Capiat unam statim et alteram post horas tertias. Habeat post solutionem alvi Guttæ Nigræ* gtts. xv.

30th. 8. A. M. The headach not at all relieved. During the night has been very sick from the calomel; pulse 92; heat of skin less intense, unless in the scalp; temples throbbing; thirst unabated; face very *pale*; is perfectly sensible.—*Applr. temporibus hirudines* xii. *Capiat statim Guttæ Nigræ* gtts. xx. *Immittatur Enema meridie—et post alvum laxatam* gtts. xx. *Guttæ Nigræ. Persistat in usu linteorum frigidorum.*

8 P. M. The bowels twice moved after the injection. At 2 P. M. she had the second dose of black drop. About an hour after it had been taken, she began to waver and talk of noises and persons which had no reality. The pain of the head continues unabated; the thirst as great; pulse 92, and more calm. She complains of a feeling of great oppression at her heart, and her bowels are full of flatulence. It is now eighty-four hours since she has tasted any thing but toast water, nor has she had any thing that can be called sleep. At my recommendation she took a little arrowroot, with a teaspoonful of wine in it.

11 P. M. Another copious stool; pulse 88 to 92; skin cooler.—*Habeat statim Guttæ Nigræ* gtts. xx.

31st. 8 A. M. Very uneasy and restless during part of the night; pain of head much as before; oppression at heart abated; pulse 86 to 90; skin cooler, and especially the head; no sickness;

no stool. Has taken at intervals during the night a small teacupful of thin arrow-root containing three teaspoonfuls of sherry.

℞ *Ext. Col. c. g.* iij. *ft. pil. statim S. et post alvum solutam, habeat Guttæ Nigræ*, gtts. xv.

31st, 9 P. M. Pulse 80 to 84; heat of skin moderate; she herself feels rather cold; her *breathing laborious*, requiring her to 'reathe between each word when she speaks; had a quiet forenoon, having slept twenty minutes; pain of head less severe; three copious natural stools. She likes the arrow-root.

I gave her two teaspoonfuls of sherry in a little water.

11 P. M. Skin hot; pulse 96; the laborious breathing gone; does not feel worse.—*Habeat h. s. Guttæ Nigræ*, gtts. xv.

November 1. 8 A. M. From 11 last night till 1 A. M. was very uneasy; much distressed, with delirious feelings. At 1 A. M. she had the black drop, which, for the first time in her present illness, produced a calming effect. Since 5 A. M. especially, has been very tranquil; pulse 80; heat moderate. Notwithstanding the above improved symptoms, she is quite desponding as to her recovery,—a state of mind very unusual with her. I told her I considered her decidedly better. Continue the arrow-root and wine, and fifteen drops of black drop in the forenoon if necessary.

9 P. M. Pulse 80; a quiet day; took the black drop, which agrees well. Has taken some arrow-root; less pain of head; no sickness; no stool.—*Habeat. h. s. Guttæ Nigræ* gtts. xv.

2d. 8 A. M. A very quiet night; skin is hot; pulse 96; she feels better; no stool.—*Adhibeatur Enema purgans. Contr. cetera.*

9. P. M. For two hours in the forenoon was very tranquil. About one p. M. the fever returned, and since she has been very uncomfortable; thirst unquenchable, (has drank several quarts of toast water;) skin hot; occasionally during the day her headach has been very severe; pulse 94; the black drop in the forenoon agreed; no stool.—*Rep. enema, et h. s. habeat Guttæ Nigræ gtts.* xviii.

3d. 8. A. M. A very quiet night. At bed time she was so easy that she begged them to defer her black drop, which she did not take till 4. A. M. and has since been very tranquil; headach better; pulse 84; two bilious stools from the injection.—Repeat the enema; continue the arrow-root and wine, and the black drop.

4th. 1. P. M. An easy night; thirst less; headach only occasional; still subject to irregular attacks of heat and flushing; pulse 78; has taken a little arrow-root; no stool.—*Rep. enema. Cont. cetera.*

5th. A quiet night, though without refreshing sleep; pain of head in great measure gone; thirst gone. Nauseating the arrow-root, she took at bed-time two or three teaspoonfuls of wine with a bit of bread, and has had a little chicken-broth this forenoon; pulse 66.

11th. Since last report, Mrs —— has on the whole been going on favourably, free from thirst and fever, and almost free from pain, but very languid and low. Yesterday morning she took by my direction two mild aperient pills, which, although they moved the bowels only once, griped and pained her very much. About 7. P. M. she became sick, and retched a great deal with severe headach. After two hours the severity of the attack passed away; she had a bad night, but after six this morning has been better. Now (1. P. M.) pulse 68; tongue clean; slight headach; the voice too is stronger.

16th. To-day I learned that for some time back Mrs —— has been afflicted with dreadfully acute pain in the region of the *meatus urinarius*. This pain, which is quite new, comes on suddenly, goes on increasing in severity for an hour or two, and then gradually passes away; it attacks at irregular periods, is ushered in with a sense of coldness, and goes off as heat is restored. Mrs —— describes it as intense to agony while it lasts, but when the paroxysm is over she has not a vestige of her former suffering. There is no appreciable change in the parts affected. Mrs —— herself thinks this pain connected with her back, and I quite agree with her.

Between the above date and the 1st of December various plans were tried without producing decided relief; the pain still continued to recur with varying degrees of severity. In the first week of December it began to abate, and before the 10th had quite disappeared for several days.

Till this date Mrs —— had been in the country. On the 18th December she returned to Paisley. She bore the drive pretty well till we got into the town; she then complained of faintness. When we stopt at her door she was hardly conscious, and was carried up stairs, and laid on her bed in a state of insensibility, moaning and cold, and soon after universal cramps attended with severe pain followed. This attack was succeeded by febrile reaction, and gave a severe shock to her system. Next day the neuralgic pain in the region of the urethra recurred, and continued to annoy her with great pertinacity. The pulse never was affected by it.

In addition to this wearing out pain, Mrs ——'s recovery was much retarded by a recurrence of the hemorrhage from the bowels, which was referred to at the commencement of her present illness, in October last. After the date just mentioned Mrs—— was free from this ailment, till some time after her return to Paisley, and my attention was not particularly directed to it till the middle of January. At this period it recurred with very unequal severity, the discharge being at times very considerable, at others trifling in quantity. When it was most considerable the blood was either passed in large clots, or pure, and of a vermilion colour. Between the attacks there were often several days. She complained of frequent feelings of sinking and languor, sometimes amounting to deliquium; deadly paleness; little or no sleep; total inappetence; pulse ranging from 60 to 68. At first I was inclined to think that this hemorrhage proceeded from the small intestines, and directed my treatment accordingly. On narrowly examining the evacuations, however, I soon saw the discharge must proceed from the rectum. When the evacuations were of any consistence, there was blood on the surface of the feces, as if it had been deposited in the act of passing. Sometimes the blood passed was quite florid, at others it coagulated after it was passed, clearly showing that the bleeding points could not be far from the external passage. There never was any thing like the tarry discharges of melæna. Injections of infusion of galls, thrown up by a rectum syringe, produced an immediate effect in checking and soon removing the hemorrhage. These injections produced considerable pain and tenesmus shortly after they were taken. After the cessation of the hemorrhage, the sinking and languor still continued, and, added to the total want of appetite, was very distressing. She almost lived on two glasses of port-wine a-day.

About the beginning of February, in addition to her other sufferings, she began to complain of severe pain in the belly, like violent *tormina*. This pain seemed to alternate with the urethral pain. What effect the stopping of the discharge had in producing it I know not. One day that she was suffering great agony from the pain in the bowels, in addition to soothing enemata, &c. I applied a long blister to the lumbar region, which I considered the *origo mali*, and with good effect.

I had long expressed a wish to form a caustic issue in the lumbar region, but her extreme dread at having her back touched, and the recollection of her sufferings with the pea issue, made her extremely averse to submit to it, and, besides, she had such confidence in fresh air and carriage exercise for restoring her that she begged me to try the effect of these expedients first.

By the middle of April, however, as matters did not improve, as she still continued to suffer severely from the kind of alternating pains I have so fully described, and her general state offered no amendment, I succeeded in persuading her to try the effect of a caustic issue just on the most tender point, and accordingly on the 18th, I formed an issue at that spot by means of caustic potass in a state of deliquescence, and a camel hair pencil. As soon as the caustic began to take effect, involuntary startings occurred. In the course of an hour, these increased to acute lancinating pains shooting between the vertebræ, causing her to cry out, and preventing her being still for a moment. She got out of bed, sat in various positions on the floor, in short, she was in great suffering for two hours. At the end of this period the violent pain wore away, and next morning she was quite free of it. This issue discharged freely and kindly, and was kept open till the 8th of June. Notwithstanding my sanguine anticipations, it produced not while it was open the slightest effect on the urethral pain, nor on the feelings of languor, sleeplessness, and inappetence. Nor, on the other hand, did it produce any feverish symptoms. It required to be dressed with the greatest circumspection, the least pressure was intolerable, an incautious touch producing neuralgia and numbness in the limbs. There had all along been considerable itching and irritation in the issue, and as the weather became warmer, this irritation became insupportable, so that at Mrs ——'s earnest entreaty at the date I have mentioned, I allowed it to heal. By this time Mrs —— had been removed to the country, and was able to take a little more exercise in the open air.

As soon as the issue was healed there was a sudden and perfect cessation of the tormenting urethral pain, her appetite began to improve, she had better nights, and slept without the use of black drop. In short, for a week or two she was wonderfully well, and had began to regain the appearance of health. Since then the pain has recurred, and her health has suffered, but from an entirely *accidental circumstance;* and at the date I now write, I am happy to say she is again very well. She is in the country, and much in the open air; eats better, and sleeps well; free from fever and every unfavourable symptom. The tender back continues in *statu quo,* and I much fear will continue from time to time to be a source of irritation and mischief.

Observations.—That these cases depended on irritation of the great nervous centres I think there can be no doubt.

In the second case the occurrence of the injury to the spine makes the proof almost direct,—while in the first case the eventual relief which followed from measures directed to the spine, renders the proof nearly as satisfactory. In Miss ——'s case it will have been noticed that the first examinations of the spine, although they discovered much general tenderness and weakness, afforded nothing like decisive evidence of acute irritation in any particular locality; excited for instance neither the cough which was at the time so distressing, nor the stitch in the chest which was then so generally present, and that, in accordance with these facts, the first issues produced no relief to the symptoms.

On the other hand, the decided amendment of the respective symptoms which eventually followed the successive issues and counter-irritation in the loins, back, and neck is unquestionable; and the discrepant facts are, as it seems to me, only to be reconciled on the supposition that the first train of symptoms depended on ganglionic irritation, beyond, therefore, the reach of issues and blisters, but that the last train of symptoms depended on spinal irritation, and thus became amenable to the very means which had failed in the first.

The dependence of the last train of symptoms on spinal irritation admits of positive proof. The gentlest pressure at the under part of the neck produced the swoons. They were in like manner constantly preceded by a sudden dart of pain at the same spot. Blisters and a caustic issue applied to the spot at once greatly alleviated, and at length removed them. The effects of counter-irritation applied to the dorsal spine equally fixed the stitch in the chest to that locality, and lastly, the pain and numbness produced by pressure on the lumbar spine, with the effects of caustic issues applied to that part of the vertebral column on the cramps of the belly, and paralysis of the limbs, in like manner determine positively the source of these symptoms.

That the morbid irritation, whatever it may be, does actually shift from one point of the spinal system, producing in these shiftings corresponding symptoms, we have in Miss ——'s case also clear proof, so that with this undeniable evidence of the general metastatic nature of the affection, I can see nothing unreasonable in the supposition that, in the progress of the case, the irritation had actually shifted from the ganglionic to the spinal system, and that the occurrence of the cataleptic symptoms probably marked that change.

The cataleptic state is a kind of temporary paralysis, or numbness of the organs of sensation and perception, a state of non-suffering, or negative existence,—a kind of morbid and unsatisfactory substitute for sleep produced at a time when weary nature can bear no longer; for in every case I have met with it, it has succeeded a previous period of agonizing suffering and sleeplessness. This cataleptic condition is totally distinct from genuine apoplectic or paralytic affections, and as these cases fully show, may occur frequently, and last long, without leaving any permanent trace behind it.

But if the original dependence of such cases on irritation of some of the nervous centres be granted,—it next comes to be asked, is this irritation of such a nature as wholly to exclude all connection with a *phlegmasia?* In such a case, for example, as Miss ——'s were neither the pain nor the hemoptysis connected with inflammation?

To maintain this would be to sacrifice fact to system. In the case referred to the hemoptysis had, in the state of the pulse, the fever, the appearance of the blood, and the effect of blood-letting, every character of inflammation, no doubt modified by and rendered so obstinate from the neuralgic condition,—a condition, moreover, which seems to confer on the constitution great power of enduring suffering.

As to *diagnosis*, I shall confine myself to an attempt to distinguish neuralgic cases from cases of pure inflammation.

The constitution of the individual,—the history of the attack, its frequently instantaneous seizure, its recurrence,—the very severity of the symptoms, their occasional great discrepancy, their obstinate resistance to ordinary remedies, their metastatic and anomalous character, and apparent independence of organic affection,—the minutely circumscribed locality which is the seat of pain or irregular action,—the character of the pulse,—the absence of the usual precursors of inflammation, or very abnormal character when present,—are perhaps the chief circumstances to be attended to.

The constitution is extremely susceptible and irritable. In most cases it will be found that a variety of anomalous symptoms and affections, sick headach of great severity, retching, lancinating pains, languor, and frequent faints, or aggravated hysterical symptoms, have been the precursors of a violent attack, although these may very likely not be considered as at all connected with the after train of symptoms. The attack, unlike inflammation, is not progressive, but in a very short time attains its height, and without shivering or other febrile precursors. The symptoms, though relieved for a time, are constantly recurring, and even often observe a degree of periodicity quite unlike inflammation. The pain in *neuralgia* is greatly more severe and agonizing than in pure inflammation, and is, moreover, not amenable to antiphlogistic or anodyne remedies. In inflammation there is no such phenomenon as excruciating pain darting from the back to the head, and instantly producing incoherence or delirium, nor such metastases, as from vomiting to cough, or pain in the chest to toothach, or from cramp in the belly to overpowering headach, with perfect relief to the alternate symptoms in the successive changes. In inflammatory diseases, if they continue a certain time, organic changes ensue. Vomiting or cough continuing for weeks, and dependent on inflammation, would unquestionably be accompanied with corresponding changes of structure in the respective viscera, more or less easily to be ascertained. The same symptoms continue for months in neuralgic cases without a shadow of evidence of any organic change. In neuralgic affections, (of the chest or belly for example,) the pain is confined to one spot, the least touch of which produces agony. This exquisite isolation is very rarely a character of inflammation. When, as sometimes happens, these internal and visceral pains alternate with similar acute pains in the limbs or external parts, the diagnosis becomes much easier.

In neuralgic cases the firmness and hardness of the pure inflammatory pulse are not observed, unless in occasional combinations with the *phlegmasiæ.* On the contrary, along with great frequency, there is a bounding, a softness and agitation in the strokes of the pulse, understood by practical men under the denomination of irritable pulse.

The violent symptoms in neuralgia are not ushered in with regular febrile precursors. More or fewer of these may indeed be present, but they want the regularity they present in inflammatory attacks. In neuralgia every thing is in excess; the heat for instance intense, the thirst unquenchable, the pain extreme; but there is a discrepancy, and hurry in the symptoms, which, to say the least of it, forms the exception and not the rule in inflammatory cases.

When there is such discrepancy as violent pain, or incessant cough, with a calm and natural pulse; panting breathing without hurry of the circulation; sudden numbness or paralysis of the limbs occurring in the midst of a fit of coughing; violent headach, or toothach, or muscular spasm ending in catalepsy, &c. the nature of the case becomes very clear. Lastly, examination of the spine in many cases removes all doubt, by discovering to us points so tender as to cause agonizing pain, or perhaps the very symptoms of the disease on slight pressure. It must, however, be kept in mind that, if the ganglionic system be the centre affected, an examination of the spine affords no evidence of the morbid affection.

The prognosis in neuralgic cases, especially when not much complicated with inflammatory phenomena, may in general be favourable.

Treatment.—On this topic I need not dilate. When the nature of the case is clearly seen, there will, I believe, be little difference of opinion as to the mode of treating it.

In complicated and violent cases, such as those narrated above, blood-letting to a greater or less extent seems absolutely necessary; but even in these cases this powerful remedy is to be viewed as a palliative not a radical cure. It may moderate the symptoms, and render their violence less likely to injure the various organs, but blood-letting will not remove the disease. On the contrary, I believe, a state of *anœmia* greatly aggravates such distressing neuralgic affections, which in many of their symptoms greatly resemble that painful condition. In neuralgic cases blood-letting will not calm the circulation, nor will it altogether remove or prevent the recurrence of pain; but, judiciously applied, and apportioned to the strength of the patient, it will eminently palliate violent symptoms. In neuralgic cases blood-letting is to be resorted to as a palliative resource when other less energetic measures fail. In inflammatory diseases blood-letting is our chief dependence, and by its appropriate application we may fairly hope to remove the disease suddenly. While, however, this important distinction is to be kept in view, we are also to recollect, that in neuralgic cases, inflammatory complications requiring more active treatment are occasionally occurring; but even here the neuralgic condition must influence our treatment.

As examples of what I here mean, I would cite the hemoptysis in Miss ——'s case, and to a certain extent the irregular pleuritis and peritonitis in Mrs ——'s case. In the first instance, we had, as it seems to me, every proof of an inflammatory attack, and perhaps I would have been more successful in arresting or moderating its violence, had my first bleedings been more energetic. But it will be recollected that deliquium was not easily produced in this case, and indeed it was in many respects very peculiar. In the second instance, on the contrary, I carried depletion fully far enough, and this *solely because* I viewed the case as more purely inflammatory than I now consider it to have been.

Local blood-letting frequently affords temporary relief, and is generally safer than repeated general blood-letting. When the suffering point of the nervous system can be determined, however, topical bleeding there will afford infinitely more relief.

Detraction of blood in all forms, however, must be proportioned to the character and the violence of the symptoms, and the strength of the patient. In Mrs ——'s case, for instance, I never thought of bleeding the lumbar region for the urethral pain, because, though severe, it was transitory, and principally because she had every appearance of having too little rather than too much blood.

The judicious administration of purgatives is a matter of great importance; but so much has been written on this subject, that I deem it unnecessary to say a word.

To moderate the agonies of neuralgic suffering, *anodynes* must be a chief reliance. In many cases, indeed, they seem food and drink to the poor sufferer. In urgent cases they must be given in full doses, and frequently repeated, so as to keep up the narcotic effect. It is truly fortunate when opium in any shape agrees with the patient, for when it does so I consider it by far the best. In Miss ——'s case I know not what she would have done without black drop. She took it in great quantity and for a long period. We hear much of the baneful effects of opium on the digestive organs, and I readily grant that, as long as it is taken habitually and in large doses, there can be no re-establishment of health; but in such continued and various suffering as Miss —— endured, to withhold full doses of opium would be cruelty, and, what is worse, it would be cruelty guided by mere speculation; for I appeal with confidence to her present state as a full refutation of there being any necessary connection between the morbid sensibilities and appetites of the opium-eater, and the rational, though free and long-continued, use of opium in disease.

Mercurial action has been much extolled in such cases. In Mrs ——'s case such was the irritability of her system that it was nearly impossible to administer medicine in any shape or form without producing violent and unpleasant effects; so that in her case I could not exhibit mercury in any way. In Miss

——'s case it was tried in various forms and with great perseverance, without producing the least constitutional effect, (unless, indeed, the removal of great part of the tonsils be considered so,) and without the slightest effect on the symptoms.

Veratria, I confess, much disappointed me. After reading Dr Turnbull's praises of it, I could not rest till I tried its effects in Miss ——'s case. I sent to Apothecary's Hall, London, that I might be sure of the genuineness of the article, and gave it a fair and continued trial. It produced the local tingling, characteristic of its action, but had not the slightest effect in relieving the painful symptoms, for the relief of which it was applied.

Of course in every case much modification both of the medicines and the form of their administration will be required; but after all it is to the suffering nervous centre that our chief attention ought to be directed.

When the ganglionic system is the centre affected the symptoms are very uncontrollable; but even then, in addition to the general means already hinted at, local bleeding at different parts of the dorsal spine and chest, with occasional blisters or other counter-irritation, ought to be tried.

When from examination we have evidence that the spinal system is the diseased source, we have every reason to be sanguine in our hopes of local treatment in the various forms in general use, and this part of the treatment ought to be our chief aim.

When the cerebral system is affected our applications must be directed there.

Absolute rest in the horizontal position is in many cases beneficial and necessary; free air and well-regulated ventilation are very important adjuvants.

When the state of the patient admits of change of scene, country air, and gentle carriage exercise, they ought to be strenuously enjoined, as the benefits thence resulting are often great and striking.

The regulation of diet, and indeed many other particulars of treatment, I purposely pass over, both because they are obvious, and because this paper is already too long.

Paisley, *August* 1835.

Art. IX.—*Observations and Experiments upon the Function of the Cæcum*. Translated from the German of Dr C. H. Schultz, Professor of Physiology at the University of Berlin.

The endeavours which have been hitherto made to inquire into the nature of the digestive process have been of a purely chemical character, and have served almost entirely to withdraw the physiology of digestion from the department of medicine into that of chemistry. It is true, this view of the matter has its foundation in the nature of digestion, since food, as chemical matter, must be acted upon by chemical means, before it can be transformed into the living substance of the body. Medicine, however, is not satisfied with the knowledge of the mere chemical part of this process; and indeed, if it be admitted, that, as digestion begins with chemical action, its object, the formation of the blood from food, can be chemically understood, the inquiry may obtain a result entirely opposed to the organization. An unbiassed view of the matter shows us much better, that the chemical qualities of the food must be annihilated by digestion, that living qualities may arise from it; and it is evident, that the chemical part of digestion has no other object than to destroy the chemical nature of the food, and thereby make it capable of giving rise to a living excitability. The chemical part of the digestive process, therefore, is merely an introductory and preparatory action, with the finishing of which the chemical efficiency ceases, just as, on the other hand, the living body loses its excitability when it is delivered up by death to chemical action. Excitability and chemical action, like life and death, exclude each other, and it is merely the object of overcoming the chemical nature of the food which gives this function any chemical relations.

It is this point of view alone which makes us capable of understanding the true nature of diseased conditions of the digestive process, the origin of which, according to the chemical theory of digestion, would remain perfectly unintelligible. If the chemical action with which digestion begins, does not end by destroying the qualities of the food, the chemical process proceeds, and the food goes into decomposition; it then acts as an improper stimulant, and herein alone lies the origin of all gastric complaints. If the whole process were merely a chemical solution, it would be the healthier, the more this action was present; but this is contrary to all our ideas of life, as well as all medical experience. Should, therefore, the examination of the digestive process obtain a result correspondent with the true nature of health and disease, it must be effected, no less with regard to its true object, the formation of the blood, than to the chemical means, which the organization employs, to destroy the qualities of the food, before its assimilation.

These principles have guided me throughout all my experiments, and from them it will be apparent why these experiments so essentially distinguish themselves from all earlier ones. It may easily be perceived, that I have here followed a very different plan of inquiry from that which, since the time of Spallanzani, in a purely chemical sense, has been pursued; for I have always considered the chemical relations of the digestive process, not as the object, but, according to their nature, either as the operation and products of organic action, or as means which this employs for the assimilation of the food; I have therefore paid more particular attention to the organic part of the digestive process. The objects to which my experiments upon digestion, in general, extend, are; 1. The function of the *cæcum*. 2. The digestibility of the different articles of food. 3. The manner of the dissolution of the fleshy fibres in the stomach, according to microscopical observations. 4. The degree of acidity in the stomach and *cæcum*. 5. The degree of alkalescence of the food in the stomachs of ruminating animals. 6. The nature of the acids in the stomach. 7. The coagulation of milk by the saliva, stomach, &c. 8. The saliva. 9. The nature of the bile.

I was led to that class of experiments which relate to the digestion which takes place in the large intestines, by observations which I made upon myself during the course of an intermittent fever. The results of these experiments and observations, however, have nothing more than their origin in common, yet, nevertheless, appear so important, and in their results so decided, that every observer may easily repeat them for his own conviction. As they have relation more particularly to diseased affections of the digestive process, and consequently more claim to the attention of the physician, we shall proceed to relate them and their results.

I. *Experiments upon the Cæcal Digestion.*—After I had perceived by observations upon myself, that the food experienced two different degrees of preparation, the one in the stomach, and the other in the *cæcum*, I desired to know whether these observations would be established and extended, by particular experiments upon animals, or whether they would be limited and altered thereby. In this, a very important consideration could not escape me, namely, that the arrangement of the digestive organs, as well as the power of digestion in man, as omnivorous, must be something different from that of carnivorous and herbivorous animals, and that, therefore, their actions in digestion could not be exactly the same; and this is rendered evident, by the different construction of the digestive apparatus, in the different animal classes. However, we see upon a closer examination, that these differences, in their transitions and degrees, may afford important points of comparison, for the different conditions of the digestive process, which, in the different ages and states of health, are observable in man; for experience shows, that the organization of the digestive apparatus, as well as its operation in man, are more or less alterable. This is also the case with animals. As long as the young of graminivorous mammalia are nourished by milk, the first three stomachs remain undeveloped, and without any particular function; and my attention being excited by this fact, I found by examining sucking calves, that the *cæcum* at this period is also as little developed, and that here, as is the case with carnivorous animals throughout their lives, the digestion is perfected alone by the stomach and small intestines. When the calves begin to take vegetable food, the *cæcum* developes itself uniformly, and at the same time, with the three first stomachs, and afterwards obtains the great size in proportion to the small intestines, which is found in the full-grown ox. The measurements which I have taken give the following proportions of size between the *ileum* and *cæcum*;

In the sucking calf,	1 : 1
In a calf that had been weaned, and fed with hay and the like,	1 : 1.7 — 1 : 2
In the full-grown ox,	1 : 4.5 — 1 : 5
In the rat,	1 : 5.5 — 1 : 6

It was now very natural to expect something of the kind in man, and in fact, it was found, that in the new-born child, the *cæcum* was quite undeveloped, and that in general, the difference of size between the large and small intestines was nearly imperceptible. This remains the case, in the healthy state, during youth, and in the middle age only does the *cæcum* become much more extended than the small intestine. The following are the exact average proportions between the *ileum* and *cæcum*.

In the new-born child,	1 : 1
child 3 months old,	1 : 1.16
child 6 months old,	:
ileum to *colon*,	1 : 1.25
ileum to *cæcum*,	1 : 1.37
In a middle-aged person,	1 : 1.7 — 1 : 2

It is perhaps always a diseased condition where the large intestine, influenced by the manner of life, developes itself like that of herbivorous animals, more strongly. I have seen in the bodies of two scrofulous children the large intestine so greatly developed in proportion to the small, that it approached very nearly to the state of the rat. In general, however, it may be seen from the foregoing measurements, that the digestive organs of man, in the healthy state, resemble those of the carnivorous animals in youth, and in later years, those of herbivorous.

It is then very evident, that a knowledge of the differences in the digestive organs of animals may be very useful in the comparison of their different conditions in the human subject; for the nature of the human digestion will, according to age, and other conditions of life, at one time, resemble that of carnivorous, and at an other that of herbivorous animals; even if a perfect resemblance be never the case. The function of the cœcal digestion also will be more or less called into action the more or less the *cœcum* is developed. I thought it therefore necessary to be attentive in my experiments, as well to the peculiarities of the digestive process in carnivorous and herbivorous animals, as to the general accordances between them both, and the human digestion, in as much as the human digestion could be made to resemble that of the one or the other, according as the food was of an animal or vegetable nature.

If the organization of the digestive organs, and the phenomena of their functions plainly show us, that the cœcal digestion is brought more into play in herbivorous than in carnivorous animals, the reason is obvious, for animal food does not require so great an alteration to be transformed into blood as the vegetable, and may therefore be perfectly assimilated by simple digestive organs only. Vegetable food, on the contrary, is dissimilar to the animal body, and cannot be directly transformed into animal substance; it therefore requires several degrees of preparation. Moreover, animal food is almost entirely digestible, and only a very little refuse is left; but the vegetable contains a large proportion of indigestible matter, which must be separated from the other part. Hence it is evident that the mass of the vegetable food must be far greater than that of the animal. The perfect separation of the small proportion of digestible matter from the indigestible is essentially necessary to the digestion of herbivorous animals; and this appears to be impossible from one simple process of preparation. A large quantity of digestible, but as yet undigested matter, goes with the chyme from the stomach into the intestine, and would be lost as refuse, if another digestion did not take place in the *cœcum*, whereby the last part of the nourishing matter is separated from the food.

As man lives only partly upon vegetables, it is evident that that which in herbivorous animals is perfectly developed must be imperfect in him, and the observations upon myself, which I have related *(de alimentorum concoctione)* establish the fact, that a collection, and repeated digestion, of the food does take place in the *cœcum* of man. I desired, therefore, to know, how far this was the case in animals, and whether the nature of the fœcal digestion could be explained by experiments.

Exp. 1. It is known that Viridet *(de prima coctione)* has already remarked, that the food becomes again sour in the *cœcum* of rabbits, after it has been neutralized in the small intestine. This phenomenon has been since often observed, and confirmed, but not as yet followed out in all its relations and effects. It is evident that the alteration of the food in the stomach is only a part of its perfect preparation, and change into chyle; the other part is the neutralization of its acid qualities, and the perfecting of what is already digested by mixture with the bile and pancreatic juice in the *duodenum*. If now a second degree of preparation takes place in the *cæcum*, it is not sufficient that the food should be here a second time oxidized, but the further alteration which follows its oxidation in the stomach is also necessary; and this I desired above all things to know more exactly.

I examined the food in the *cæcum* of a rabbit that had been fed a few hours before, and found it sour, though not so much so as in the stomach. I examined also the contents of the *cæcum* of a rat, that, as could be seen by the stomach, had eaten a little fat meat and potatoe; here the reddening of the blue paper was much stronger than in the rabbit, and I found to my astonishment that the contents of the stomach were but very little sourer than those of the *cæcum*. Comparative experiments upon several rabbits showed, that in general the contents of the *cæcum* in them is never so strongly acid as in the rat.

I next proceeded to examine the food in the *cæcum* of an ox that had fasted for some time, and found it, contrary to my expectation, neutral. I immediately procured the contents of the *cæcum* of a sheep that had likewise been slaughtered after long fasting, and this, so far from reddening the blue paper, made the red paper blue, showing the presence of an alkali.

Exp. 2. I learnt, therefore, from the foregoing observations; 1. That the degree of acidity in the *cæcum* is not always the same; 2. That this acidity is not always present, and that the food may even become alkalescent. The reason of this I could easily conjecture, after the observations I had made upon myself; namely, that after the collection of the food in the *cæcum*, the bile flows through the small intestine into the *cæcum*, and thereby enables the digestion to proceed. After these observations, it appeared to me probable, that the acid qualities of the food could be neutralized in the *cæcum* of the rabbit, by allowing the animal to fast for some length of time, so that the bile might flow partly or wholly unchanged into the *cæcum*. I therefore allowed a rabbit to fast twelve hours before it was killed; upon examination the contents were found to be neutral. Another was killed after twenty-four hours fasting, and here the food in the *cæcum* was evidently alkaline.

Exp. 3. It was now natural to expect, that if the acidity of the *cæcum* was neutralized by bile, the bile itself should be found in the course of the small intestine. I therefore cut open the intestine of a rabbit that had fasted twenty-four hours, and found throughout its whole length a fluid of the appearance of bile. Pieces of blue and red paper were then placed upon different parts of the inner surface of the intestine; the blue paper from the commencement to the end remained unchanged, and the red became blue as with pure bile. I have several times repeated this experiment, and always with the same result.

Exp. 4. I expected to find the reverse of this in sheep and oxen that had been fed a little before being killed, and in fact, I found that my conjecture was true. The food in the *cæcum* of an ox that had been fed in this manner was sour, and not neutral, as was the case with those that had fasted: the same was found in the sheep, though only after plentiful feeding. By comparative experiments upon rabbits, I found that, if opened directly after death, there was a strong peristaltic motion in the *cæcum*, if the contents were either neutral or alkaline, but as long as they remained sour, no motion was perceptible.

Exp. 5. I was convinced by the foregoing experiments that all the bile which is secreted by the liver during fasting is by no means contained in the gall-bladder, and that that part is very small in proportion to the large quantity which flows into the intestine, during the empty state of the stomach. I learnt therefore, by these means, a way in which the contents of the *cæcum* could be rendered acid, neutral, or alkaline, according to pleasure, that is, by allowing the animal to fast more or less time before killing it. If, during the acidification of the food in the *cæcum*, the animal be again fed, the bile is absorbed by the chyme flowing out of the stomach, and the contents of the *cæcum* remain sour: but if, on the contrary, the animal fasts any length of time, it is neutralized, and at last rendered alkaline by the overplus of bile. I now conjectured, that, if a certain quantity of bile is absorbed by a correspondent quantity of food, so that the acidity in the *cæcum*, as well as in the stomach, might be neutralized, an acid or alkaline condition of the whole alimentary canal might be produced by a persevering increase or diminution of the quantity of food for some time. I found that, though the increased alkalescence could certainly be produced by a withdrawal of food, yet the instinct of the animal opposed the production of acidity from too great a quantity.

I caused a rabbit to fast thirty-six hours; the reaction of the whole canal was alkaline. Another rabbit was fed for two days, with only a small potatoe, three times a-day, so that in all it received only a very small quantity of food; it was killed an hour after it had eaten the last potatoe. In the *duodenum* the food was neutral, though it otherwise used to be sour; all the other parts of the canal, and even the feces, tested the presence of an alkali. In another experiment of the same kind, I found in the *duodenum* also an alkaline reaction.

Exp. 6. I have never been able to produce acidity in every part of the alimentary canal in rabbits by plentiful feeding, for these animals always fast several hours after a good meal, and the food towards the end of the *ileum* I found was always neutral. The acidity, however, extended itself as far as two-thirds of the small intestine, and the contents of the *cæcum*, *colon*, and *rectum*, were sour; so that this was a very near approach to universal acidification.

I had often remarked, that after the collection of the food in the *cæcum* of rabbits, the bile by flowing through the empty intestine rendered it alkaline, but that at the lower end of the *ileum*, before the cœcal valve, this alkalescence ceased, and at the other side of the valve the contents of the *cæcum* were sour. I conjectured, therefore, that though the bile could at all times flow through the empty intestine, yet it could not go straight into the *cæcum*, and that at such times a collection of bile must take place before the cœcal valve. To examine this farther, I killed several rabbits that had been well fed, and allowed to remain till the end of digestion, and the consequent collection of the food in the *cæcum*. I found in all of them pure bile collected in greater or less quantity at the lower end of the *ileum*, though the contents of the *cæcum* were still sour. It is only after perfect acidification, and at the beginning of the peristaltic motion of the intestines, that this bile flows into the *cæcum*.

Exp. 7. Dogs and cats take large quantities of food soon after one another, more easily than rabbits, and, therefore, the acid or alkaline condition of the intestinal canal can be more easily produced.

A dog that had fasted twelve hours after a moderate meal was killed; the whole of the small intestine was empty of food, except at the end of the *ileum*, where a little meat was still to be found; it was filled with a fluid of the appearance and quality of bile. Red paper was placed upon the inner surface of the intestine throughout its whole length; it was rendered blue even from the *duodenum*, just as strongly as by pure bile; the contents of the *cæcum* and colon were also alkaline.

Another dog that in three days had eaten ten pounds of raw horse-flesh was killed three hours after eating the last portion. The food in the *duodenum* was very nearly as sour as in the stomach itself. The blue paper, however, was not so readily altered towards the end of the *ileum*, and at the end itself scarcely at all. The contents of the *cæcum* and the *feces* were sour.

In another dog that had been fed in the same way, and killed two hours later, fleshy fibres were found unchanged, and of a natural colour, in the latter half of the *ileum*, which rendered the red paper nearly blue; in all the other parts of the intestine the reaction was acid. In general the colour of the chyme in the *duodenum* was milk white or grayish, and towards the end of the *ileum* brown.

Exp. 8. The length of time which is passed after feeding, and the degree of perfection of the gastric digestion, has great influence upon the acidity or alkalescence of the different parts of the canal. When after a moderate meal the chyme is gone from the stomach sour into the intestine, the reaction is in general acid till towards the end of the *ileum*. A few hours earlier, whilst the greatest part of the food is still in the stomach, or a few hours later, when, after the emptying of the stomach, the bile flows unchanged into the intestine, the acidity is very small, and sometimes the alkalescence is already begun in the upper half of the *ileum*. If the animals are killed after the gastric digestion is completed, and when the bile in flowing into the *duodenum* meets with no more sour chyme, the reaction is in general in the *duodenum* alkaline and in the lower parts of the canal either acid or neutral, but if they are killed at the beginning of the digestion the contrary is the case.

In two cats which were killed, the one three, and the other seven hours after being fed, very different reaction appeared in the intestinal canal. In the one that was killed three hours after feeding, the reaction in the *duodenum* was a little sour, at the commencement of the *ileum* neutral, and in all other parts of the canal as far as the *rectum* alkaline. As very little chyme had as yet flowed from the stomach into the intestines, this must have been the condition in which it would have been found before the feeding.

In the other, all the contents of the stomach were gone over into the intestines, and the whole canal from the *duodenum* as far as the *rectum* was acid. The acidity was strongest in the *duodenum*, decreased towards the end of the *ileum*, and in the *cæcum* became again stronger. The colour of the chyme was in general grayish-white, but towards the end of the *ileum* brown.

In a rabbit that was killed six hours after feeding, when the digestion in the stomach was ended, the reaction was already alkaline in the *duodenum*, and at the end of the *ileum* neutral.

Exp. 9. The time which the animals have fasted before feeding has also a great influence upon the acidity or alkalescence in the intestines, particularly if a very large or a very small quantity be taken. A dog that had fasted sixteen hours, and in which, according to the foregoing experiments, the whole of the canal must have become alkaline, was fed with about a quarter of a pound of meat and vegetables. After six hours, when the food in the stomach was perfectly digested, he was killed; the contents of the small intestines were, however, neutral, and of the rest of the canal alkaline. A second dog that had fasted six hours received about the same quantity of food of the same kind. He was killed also after six hours; the reaction in the *duodenum* was strongly acid, and the acidity extended itself, although gradually decreasing, as far as the end of the *ileum*.

Exp. 10. The quantity of digestible matter which is contained in the food has a great influence upon the degree of acidity in the *cæcum*. The greater the quantity of digestible, though as yet undigested matter, which goes into the *cæcum*, the greater is the acid reaction. It is for this reason, it appears to me, why rats, when they have eaten fat meat, which goes through the small intestines mostly unchanged, have a greater acidity in the *cæcum* than rabbits which have been fed with grass.

A rabbit that had been fed with oats, and killed four hours after, showed a stronger acidity in the *cæcum* than one fed with grass. I found also in oxen that were fed with hay, the contents of the *cæcum* were neutral, or, under any circumstances, only weakly sour. The acidity was strongest in one that had been fed with wheat straw. It is probably for the same reason that easily digested matter becomes more strongly acid in the stomach.

In a goose which was fed with barley and bread, I found that the blue paper was strongly reddened by the contents of the *cæcum*; but in one, on the other hand, which was fed with grass, the reddening was scarcely perceptible.

Exp. 11. In carnivorous animals, where the *cæcum* and *colon* are but little developed, the food is, for the most part, digested by the stomach and small intestines, and the acidity in the *cæcum* is in general very weak, since the food, when it is here collected, contains little or no digestible matter. The contents of the *cæcum*, therefore, are mostly neutral or alkaline; and I have only observed acidity of the *cæcum* in a few dogs, which were fed with large quantities of meat and potatoes. Potatoes are probably, as well as all vegetable food, only partly digested in the stomach of carnivorous animals, and so the undigested part becomes again sour in the *cæcum*.

II. *Results of the experiments upon the cæcal digestion.*—It may, therefore, be gathered from my observations and experiments, that the food in the *cæcum* becomes not only a second time sour, but that the acid chyme is there neutralized by the access of bile, in the same way as in the *duodenum*; so that after the employing of the intestines very different reactions may be produced according to pleasure. On account of this twofold consumption of bile in the stomach and *cæcum*, there is an antagonism between the two digestions; for when the bile is consumed by the digestion in the stomach, the cœcal digestion cannot be perfected, and, on the other hand, when the bile flows into the *cæcum*, the neutralization of the acidity in the *duodenum* cannot take place. In those animals in which the cœcal digestion is most perfectly developed, this antagonism appears to be so arranged, that each digestion has its particular period of action, so that when the one is in action, the other is either lessened or at rest. In ruminating animals, it is very evident that the gastric digestion takes place more particularly during the day, and the cœcal at night, so that I think the gastric may very properly be called the diurnal, and the cœcal the nocturnal, digestion.

In carnivorous animals, however, the *cæcum* is so little developed, that the stomach alone furnishes nearly the whole process of digestion. These animals, therefore, have a preponderating diurnal digestion. This agrees with the fact, that carnivorous animals rest for the most part during the day, and at night become hungry, and seek their prey, and are, therefore, nocturnal animals, since their digestion takes place during the day.

As the formation of the *feces* follows the perfected cœcal digestion, herbivorous animals are accustomed to discharge the greatest quantities in the morning and evening, and but very little during the day, and the healthy course of digestion. There appears to be something similar to this in man, in those ages where the cœcal digestion is most developed; in childhood, on the contrary, when the digestive apparatus resembles that of carnivorous animals, repeated discharges of excrement take place at indefinite periods of time.

The use of the valvula cæci in cæcal digestion.—That the cœcal digestion may take place, it is necessary that the still digestible remains of the food should be rendered acid and changed into chyme, as in the stomach, before its mixture with the bile. This could not happen if the bile flowed continually into the *cæcum*, and it is therefore probable, that its opening into the small intestines is closed during chymification, as the stomach is closed during its digestion, only with the difference which the different state of the matter requires. The stomach is closed during digestion at its pyloric orifice, to prevent the egress of the food, and the *cæcum* at its iliac opening, to prevent the ingress of the bile. This is my view of the use of the *valvula cæci*. I have not only found in general at the lower end of the *ileum*, an alkaline reaction, while the upper is still either sour or neutral, but at certain periods of digestion, a collection of pure bile at the iliac orifice of the *cæcum*. The contents of the *cæcum* are at this time nevertheless sour. This would be impossible if the mouth of the *cæcum* were not closed during chymification. After the collection of the food, therefore, in the *cæcum*, its opening, like that of the bladder, *uterus*, and stomach, appears to be strongly contracted by its muscular fibres, and with the help of the *valvula cæci*, to be perfectly closed. The contrary is the case at the beginning of the peristaltic motion of the *cæcum*, and upon the opening of its iliac orifice the collected bile flows in. This agrees with the sensation of the ceasing of the peristaltic motion after the collection of the food in the *cæcum*, which I observed upon myself, and have described in my work *(de Alimentorum Concoctione Experimenta Nova.)* It appears to me, therefore, that the generally admitted explanation of Fallopius, according to which, the use of the *valvula cæci* is to prevent the return of the food from the *cæcum* into the *ileum*, is quite unfounded; for it may be easily seen that during excretion this backward motion is very possible.

Concerning the times for eating corresponding to the periods of digestion.—The simple rule to eat as often as one is hungry, appears no doubt the most natural. I shall be able, however, to show that this rule is by no means universal, and in many instances even pernicious. I shall succeed best if I prove that one is often hungry without having the least real need of food, and that this hunger is better allayed by fasting than by eating.

Hunger is the feeling of need of the nourishing parts of the blood, and is situated in that organ, through which it is satisfied,—the stomach. This appears to be the reason why, when the stomach is empty, we hunger, and not when it is full, even when it is filled with perfectly indigestible matter, which cannot satisfy the true feeling of hunger. We cannot judge from hunger whether the food be digested, and the proper source of hunger satisfied; and, therefore, this feeling cannot be the only rule for eating, since a perfect and undisturbed digestion is necessary for the true allaying of hunger, and, therefore, when digestion would be disturbed thereby, it would be improper to eat, notwithstanding hunger may be felt.

If we consider under this point of view the antagonism between the gastric and cœcal digestion, it follows, that, if both be excited at the same time, they will reciprocally disturb each other, and that for perfect digestion, and the proper formation of the blood, they must take place at different periods of time. My experiments show that, for the completion of the cœcal digestion, the bile flows through the small intestine into the *cæcum*, and the whole intestine becomes thereby more or less alkaline;

but they also show, that if, during the cœcal digestion, the stomach be put into action, the flowing of the bile to the *cæcum* is stopped, and its digestion consequently hindered, since the chyme cannot be neutralized, and all the contents of the canal as far as the excrement become sour. The formation of the blood in the lower parts of the canal is hereby disturbed, and the gastric digestion is also rendered imperfect; so that the two digestions cannot take place in their integrity at one and the same time. The completion, therefore, of the cœcal digestion is indispensably necessary to perfect digestion in general, and it becomes very important so to regulate the periods for eating, that the activity of the stomach may not disturb the digestion in the *cæcum*.

If now, the cœcal digestion be considered more particularly as a nocturnal digestion, the meals should be so regulated, that, when this begins, the stomach may no more be put into action, or at least not overfilled. It is generally admitted that a man digests a moderate meal within three or four hours. My experiments, however, upon carnivorous animals, which digest much more quickly than the omnivorous, to which class man belongs, show, that six or seven hours are requisite for the digestion of a moderate meal, and that when dogs are allowed to eat as much meat as they will, twelve to fourteen hours are hardly sufficient for perfect digestion. The animals must even then be allowed to rest, for if they are made to exert themselves, the digestion is still further delayed, at least half the time longer. The observations which I made upon myself during the intermittent fever agree with this fact, and it may safely be assumed, that six hours are necessary for perfect digestion, that is, till all sour chyme has disappeared from the stomach. If now it be admitted, that, in the common mode of life, the nocturnal digestion begins about from seven to eight o'clock in the evening, the last meal ought to be taken so early, that by this time it may be for the most part digested in the stomach. In general, therefore, one should not eat after four o'clock in the afternoon, and evening meals should be altogether avoided; for, in proportion to the lateness of the hour and the quantity eaten in the evening, the more will the cœcal, and therefore also the gastric digestion, be disturbed, seeing that both must take place nearly at the same time.

That this rule is not so applicable in youth, (as long as the gastric digestion resembles that of carnivorous animals, and for the most part finishes the process of digestion alone,) as in riper years, follows from what has been already observed.

The more the digestion is disturbed by continued large and late evening meals, the less perfect will be the preparation of the blood, and the more will the need of its nourishing parts, or hunger, be felt, particularly in the evening when the stomach is empty. This is the reason why those people who should eat least in the evening are most hungry at this time, and here more particularly does the feeling of hunger not correspond with the period of digestion; for the more such people eat in the evening, the more imperfect is their sanguification, and the greater the consequent hunger, since the food goes almost entirely unchanged through the alimentary canal, and the nourishment it contains is lost to the body. The only means, therefore, by which this hunger may be properly appeased, is that by which the digestion may be restored, and the sanguification amended, and that is, notwithstanding hunger, to abstain from food in the evening, that the gastric and cœcal degestions may not reciprocally disturb each other.

The source of hunger will ever increase, by continually appeasing it by late evening meals, and in this way, therefore, it is as easy to starve from too much eating as from fasting: and no doubt in this way has many a person eaten himself to death, and most probably will still. We find in general that the meagerest and most sickly people are the greatest eaters, and, on the contrary, the well-nourished and powerful eat less. That in the different condition of the digestive organs of different people, and according to the quantity of food which is taken during the day, there may be various changes and exceptions to this general rule, is self-evident. Where the youthful condition of the digestive organs is still vigorous, and the *cœcum* not as yet much developed, it is not necessary to be so particular about the smallness of the evening meals; and where there is in general but little taken during the day, and the quantity of food in the *cœcum*, therefore, small, more may be eaten in the evening, as there still remains a quantity of bile sufficient for the perfection of the cœcal digestion. The longer the fasting after meals, the more bile can flow into the *cœcum* after the ending of the gastric digestion, and the less fear need there be of evil consequences.

III. *Pathological relations of the cœcal digestion.*—The intention of the cœcal digestion, as we have already proved, is, that, as the hardly digestible, and especially vegetable food, cannot be perfectly freed from all the nourishing parts by the simple chymification in the stomach, a second preparation of the undigested matter may take place in the *cœcum.* It is evident that in the healthy course of digestion, the food is prepared for the most part by the stomach, and that the *cœcum* is only an auxiliary organ. The contrary, however, is sometimes the case in diseased conditions in man; for by obstructions of the activity of the stomach, only a small part will be digested by that organ, and the greater part will be left undigested for the *cæcum*. In this case the *cæcum* will assume the most important part of digestion, since its activity is the more excited, the less the gastric digestion is perfected, and the more undigested matter will remain for further preparation in the *cæcum*. In this manner the cœcal digestion can develope itself in man nearly to the same degree as in herbivorous animals, instead of resembling in youth that of the carnivorous class; and, therefore, the whole state of the digestive process, and especially the preparation of the blood, must be materially altered.

The organization of the lymphatic system, and particularly the arrangement of the chylic vessels in the different parts of the intestinal canal, is so adapted, that the greatest part of digestion must be perfected by the stomach and small intestines, and only a small part left for the large intestines. In conformity with this rule, therefore, the greatest quantity of chylic vessels arise from the small intestines for the absorption of that fluid, and the large intestine in which, in the healthy state, only an unimportant quantity of chyle is prepared, receive a smaller number. If now, in the just mentioned diseased condition, a small part only of the food is prepared by the stomach, a greater share of the digestion remains for the *cæcum*, so that by this means the *cæcum* may become the chief seat of digestion, and the vessels of the small intestine will receive but little chyle for absorption, while the larger part of this fluid must be absorbed by the vessels of the large intestine. The small number of the chylic vessels, however, in the large intestine, is not sufficient for the absorption of all the chyle, so that the veins, and especially the roots of the *vena portae* which arise from the *colon*, begin to absorb in their stead.

A total change in the further course of digestion is now the consequence. The chyle which is absorbed by the lymphatic vessels, and further prepared in the glands, and in its gradual passage to the *ductus thoracicus*, more and more assimilated to the blood, cannot in the healthy state reach the blood in the unprepared condition in which it is absorbed from the intestine. This is, however, by no means the case with that which is absorbed by the *vena portae*, for it goes directly and unchanged as it is into the blood. The whole process of sanguification is therefore imperfect, and hence no doubt arise the various forms of cachexy according to the diseased dispositions of the different organs, in different habits and temperaments.

As soon as the imperfectly prepared chyle comes into the blood, one of the two following effects may follow. It may either happen to it the same, as, according to the experiments of Home, Tiedemann, and Magendie, happens in the digestion of fluids, namely, that after unchanged absorption of the same, by the veins of the stomach, the digestible part is delivered up to the spleen and mesenteric glands, (and in early life probably also to the thymus gland, and *renes succenturiati*,) that it may be here, in the same way as the chyle, absorbed by the lymphatic vessels, further prepared, and more assimilated to the blood. Or if the dissimilarity of the absorbed matter be too great for it to be in this way changed into blood, it may be given over directly to the secerning organs, and excreted either by the skin, the kidneys, the lungs, or by all these organs together, without giving any nourishment to the body. It may be easily perceived, that, the more imperfect the digestion of the matter absorbed by the *vena portae*, the more probable will the latter case be, namely, its direct excretion by the secreting organs, and this may in general be assumed as the case, for a preponderating cœcal digestion is always more or less a diseased condition of the alimentary canal.

As long as this imperfectly digested matter is properly excreted from the blood, the body will experience no other ill consequence, than a decrease of nourishment, and accordingly more or less leanness, though strong and robust people may be able to withstand this disordered digestion a long time without prejudice. Under these circumstances, weak people will soon, and at last even the strong, be subdued, and hence arise the different forms of cachexy, which are known under the name of disorder of the bowels, but of which the origin has never till now been properly explained according to physiological laws.

The blood itself will now become diseased by this continued supply of only half-digested matter, and will thereby lose its capability of properly nourishing and forming new parts, and obtain all the properties of the blood of cachectic people. The motion of the blood also in those vessels by which the imperfect chyle is absorbed will become obstructed. I come here to a subject which, in another place, I have treated more largely, and which at another opportunity, on account of the doubts which have been raised, I think further to pursue, since it appears of the greatest importance to medicine, namely, that the motion of the blood is originally effected by the living reciprocal attraction of the blood and its vessels. This reciprocal attraction must take place most perfectly, and the motion of the blood will be most vigorous, when the blood and its vessels are sound, a diseased condition of which must be followed by an obstruction of its motion. By this diseased state of the blood, that is, when it is impregnated with imperfect chyle, an indolence of its motion will be produced, and hemorrhoids and other diseases of the bowels will be the consequence.

In this difficult motion of the blood through the *vena portae*, it is important to observe, that the mechanical obstruction will produce far greater effects than in the healthy condition. The specific weight of the blood will obstruct its motion in the *vena portae* the more, as this is not provided with valves, and more particularly during digestion, when it absorbs most chyle. It is therefore of importance to assist the motion of the blood at this period, by removing the obstruction of its weight. This assistance will be obtained when the blood has not to rise in the *vena portae* contrary to its gravity, and as this is the case, when it is in a horizontal position, the whole process of digestion will be greatly relieved by allowing the body to rest horizontally after meals.

On the other hand, this cachexy of the blood, which is always endeavouring to free itself from strange matter through the secreting organs, will produce a constant excited action in them, and the secretions, as well as their organs, will in the end become diseased. In this manner no doubt arise calculous diseases of the bladder, mucosities of the lungs, &c. &c. Of the sympathy of the bladder and generative apparatus with the activity of the large intestines, in calculous and other diseases, I know many examples, which, however, I cannot at present relate.

The difference in the course of youthful diseases arising from the intestinal canal, and those of adult age, appears to be, that, in the greater vigour of the lymphatic system, and the (even in disease) preponderating gastric digestion of youth, the greatest part of the chylification takes place in the small intestines, and that the lymphatic vessels absorb a large quantity of half-digested matter, which in later years is absorbed by the veins only. Even if a diseased developement of the cœcal digestion, and absorption of imperfect chyle by the *vena portae* be present, this fluid will be delivered up for further preparation to the spleen and mesenteric glands, and but little or none to the secreting organs; hence the diseased glandular swellings in the scrofula of children. The scrofula of children, and hemorrhoidal and calcular affections of older people appear to be merely vicarious diseases of the different ages; and also to arise from the same source.

It is scarcely necessary to observe, that in too great a flow of improperly digested matter from the blood into the secreting organs, which are originally destined for the purification of the blood, these may often not be in a condition to separate all the heterogeneous matter, and, therefore, that the need of a further purification is still present. This process of separation may in disease be transferred to those secreting organs, which in the healthy state are not intended for the purification of the blood, and this most probably is the origin of dropsies as vicarious depurative secretions of the serous membranes, and mucous discharges as vicarious depurative secretions of the urinary and generative apparatus.

It causes also the direct transition to the formation of artificial secreting organs, in the form of diseases of the skin, ulcers, &c. &c. We shall, however, leave this subject here, since we did not intend to follow it out in all its connections, but merely to afford a few hints, whereby the right of physiology to explain the true theory of medicine might be vindicated.

Art. X.—*Extracts from the Report of the Inspectors of Factories, illustrating the state of Health in the different Factories.* [In a Letter from Mr James Harrison, Surgeon, Preston, of date 21st June 1834.]

I have ascertained the height and the circumference of the upper part of the chest of 1270 of these young persons, and have formed the following table as the result of my investigation. The examination was made with considerable care, and may be therefore relied on as accurate :

Age.	No. examined.	Aver. stature.		Aver. circum.	Tallest examin.		Lowest examin.		Greatest in circum.	Smallest in circum.
		Ft.	*In.*	*Inches.*	*Ft.*	*In.*	*Ft.*	*In.*	*Inches.*	*Inches.*
11–12	210	4	2^{5}	25½	4	11	3	10½	30	22
12–13	203	4	5	26	5	0	3	11	29	21
13–14	192	4	6½	26	5	3	4	0	32	23
14–15	197	4	7	26½	5	3	4	0	32	21
15–16	186	4	10	27½	5	6	4	1	32	23
16–17	131	5	0$\frac{3}{1}$	28	5	7	4	4	34	24
17–18	151	5	0¾	27½	5	7	4	3½	34	23

From the table we may form a pretty correct standard of the appearance of children of the respective ages mentioned in the factory regulation bill, no child less in stature than 3 feet 10½ inches, and in circumference than 21 inches, can be regarded as presenting the appearance of a child above 11 years of age ; for out of 1270 children of that age and above, only 1 or 2 were found of these dimensions ; no child lower than 3 feet 11 inches, and less in circumference than 21 inches, can be regarded as of the appearance of a child of 12 years old ; and none lower than 4 feet, and less than 12 inches in circumference, can be regarded as of the appearance of 13 years of age. The ordinary appearance, of course, must be regarded as the average size, but as there are necessarily many under the average, who are really of the specified ages, it is obvious that considerable latitude must be allowed.

From this table it will also be perceived that the growth in the children examined is the most remarkable betwixt the ages of 14 and 16 years, while in the two following years the dimensions of the body do not seem materially to have increased.

It might have been interesting, and would have set at rest the question as to the effect of factory labour over the growth of young persons, if this table could have been contrasted with one formed from persons of the same ages engaged in other occupations. At present I do not possess sufficient data on which to found an opinion. With regard to the dimensions of the chest, I am disposed to think they will be found less than in children employed in other kinds of labour; but this circumstance I believe to be owing rather to factory labour requiring little muscular effort, than to any injury inflicted on the respiratory organs. Above 14 years of age the results of my measurements of the chest cannot be relied on, as the protuberance of the breasts of the females obliged me to take the girth in them below the mammæ. If the males were taken separately the result would be more satisfactory.

The average age of the persons under 18 years old, employed in the factories which I have examined, will be betwixt 13 and 14 years, and the average time, during which they have been employed in mills, is betwixt 3 and 4 years, so that the average age at which they began to work in a factory is about 10 years.

I have made very particular inquiries respecting the health of every child whom I have examined, and I find that the average annual sickness of each child is not more than 4 days; at least that not more than 4 days on an average are lost by each child in a year in consequence of sickness. This includes disorders of every kind, for the most part induced by causes wholly unconnected with factory labour. I have been not a little surprised to find so little sickness which can be fairly attributed to mill-work. Some of the children complained of having suffered a little when first they came to a factory, from slight febrile symptoms, accompanied with loss of appetite and pain in the bowels; but these symptoms appear to be very transient, and generally so trifling as not to disable the child from continuing at his work.

The doffers in the throstle-spinning rooms, in consequence of kneeling when first they begin to work, often suffer a little from *synovitis*, or a slight inflammation of the knee-joint, excited by friction and pressure; but I have not met with a single instance of any permanent injury being sustained from this cause.

I have met with very few children who have suffered from injuries occasioned by machinery; and the protection, especially in new factories, is now so complete, that accidents will I doubt not speedily become very rare. It has been asserted that employment in factories has a tendency to produce contortions, to injure the plantar arch of the foot, and occasion other physical deformities; but after the most careful investigation, I am bound to pronounce this assertion wholly unfounded. Persons who entertain such notions must be entirely unacquainted with the nature of the employment they condemn; for that employment requires very varied motions of the body, and by no means fixes the body in an unnatural position.

I have not met with a single instance, out of 1656 children whom I have examined, of deformity that is referable to factory labour. It must be admitted that factory children do not present the same blooming robust appearance as is witnessed among children who labour in the open air; but I question if they are not more exempt from acute diseases, and do not, on an average, suffer less sickness than those who are regarded as having more healthy employments. If factory children were as well fed and clad as other children, and if their abodes were as cleanly and as well ventilated as those of children employed in other branches of labour, I believe that few employments would be found equally healthy.

I have instituted an inquiry into the state of health of children employed in the different departments of cotton-mills, and I find that the spinning is the most unhealthy, the carding the next, and the weaving the most healthy. In some factories the carding department exhibits a higher state of health than even the weaving (as will be seen when I give a few particulars of individual factories), a circumstance for which I was wholly unprepared, and for which I am at present unable to account. There is by far the most fluke in the carding-rooms, and the children generally look paler than those employed in weaving and spinning-rooms, but still the sickness in these rooms is small.

The average age at which 283 of the children in these works entered the factory, is 10 years and 2 months; of these, 73 entered before they were 9 years of age, 48 at 8 years old, 19 at 7 years, 5 at 6 years, and 1 at 5 years old. The average length of time these 283 persons have been employed in a factory is about 3½ years (three years, five months); and the average annual time which they have been unable to work from sickness is little more than 3½ days, deducting a few cases in which sickness was protracted from fever, scrofula, &c. to 6 and 12 months, the average annual illness would be considerably diminished. Out of 283, 103 have had no sickness since they were first employed in a factory.

Of 33 weavers, the average annual sickness has been 3½ days.
93 children employed in the spinning-rooms 3¾ -
74 ditto - ditto - - carding-rooms - 3¾ -

Of 35 children employed one year and under, the average period of sickness does not exceed one day.

Of 25 employed 2 years, the average annual sickness has been 5 days.
39 ditto 3 - - ditto - - ditto - - 2½
26 ditto 4 - - ditto - - ditto - - 4
31 ditto 5 - - ditto - - ditto - - 5
27 ditto 6 - - ditto - - ditto - - 5
14 ditto 7 - - ditto - - ditto - - 3
6 ditto 8 - - ditto - - ditto - - 12¾
6 ditto 9 - - ditto - - ditto - - 2
1 ditto 11 years, 7 days sickness in the whole time.

The average of those employed 5, 6 and 8 years is large, owing to one or two protracted cases.

The health of the Frenchwood factory children has been extraordinary, for out of 40 children I find 23, or more than one-half, have had no sickness, and that the average annual sickness has been little more than 1¼ day. The regulations which the benevolent proprietors of these mills have adopted, are such as to call for our warmest approval; nothing seems to be neglected in these mills that can conduce to the health and happiness of the work-people, and nothing is enforced that can create dissatisfaction. The factories are not crowded with machinery, the rooms are well-ventilated and kept delightfully clean; no rigorous system of fines is adopted, and the money which is collected from necessary fines is distributed in rewards. This is a practice marked by the soundest policy, calculated at once to prevent negligence and disorder, and to encourage attention and industry. I am sorry to understand that a very opposite system is pursued in some mills in this town. In the Yard factory troughs are provided for the children to wash themselves in, and hollow iron shelves heated by steam are placed to warm the food of such as come from a distance, and prefer dining on the premises to going elsewhere. Tea is also prepared by a woman paid for the purpose, the expence of which is repaid by those who take advantage of the convenience. The work-people provide their own articles, and the cost of water, preparation, &c. does not exceed one halfpenny in the fortnight for each individual.

Bleasdale's Executors' Mill.—In this mill 87 persons under 18 years of age are employed, of whom 59 are males and 28 females; 4 are under 11 years old, and 83 above. The average annual sickness for each young person is only 2 days; in the carding-rooms little more than 1¼ day, of an average of 22 persons, 13 of whom have had no sickness.

In the spinning rooms the average annual sickness is about 2⅙th days on an average of 65 persons, of whom 35 have had no sickness.

The average time the 87 young persons have been employed in a mill is about 4 years, and the average age is about 13¼ years, so that the average age at which they went to a mill is 9¼ years.

Lord's Factory; T. Ainsworth & Sons.—In this factory 132 under 18 years of age are employed; 16 under 11 years, and 116 above. Of the 132, 62 are males and 70 females.

The average age of those under 18 years is little more than 12½ years. The average age at which they came to a factory is 9½ years, and the average time they have been employed is 3 years and 4 months. The average annual sickness in this mill has been 7½ days, but one has been sick 2 years, and another one year, and if these be deducted, the average annual sickness will be reduced to five days.

Of 93 young persons employed in the spinning-rooms, the average period they have worked in a mill is 3 years and 5 months; and the average annual sickness about eight days, but these include the two protracted cases, which, being deducted, would leave the sickness 4½ days per annum for each person. Of 39 employed in the carding-rooms, the average period of employment is 3¼ years, and the average annual sickness is 7¼ days.

Horrocks, Jacson and Co.'s Mill, Turk's Head Yard.—In this mill there are 45 persons under 18 years of age; none are under 11 years old: of these 45, 30 are males and 15 females.

The average age at which they began to work in a factory is 10 years. The average period during which they have been employed is 3 years and 6 months; and the average annual rate of sickness is 2¼ days; 22 have had no sickness; the average time the 14 employed in the carding-room have worked is 4¼ years, and yet the average annual sickness in that room is only 1¼ day.

Of 31, employed in the spinning-rooms, who have worked in a factory on an average about 3 years, the average annual sickness is little more than 3 days.

The card-room in this mill is furnished with a fan for the purpose of ventilation; this contrivance effectually keeps the room free from fluke, and promotes a healthy circulation of air. The high state of health of the persons who work in the room, and the small average annual sickness, strongly attest the advantage of such a means of promoting free circulation of air. The expence, however, is considerable, as I understand it requires a horse-power to drive the flue.

Park Lane Mill; Cutterall and Sons.—One hundred and fifty persons, between the ages of 11 and 18, are employed in this mill; of whom 68 are males and 82 females. The average age of these employed here is nearly 13¾ years; the average age at which they began to work in a mill is about 9 years and 7 months, and the average period during which they have been so employed is about 4 years and 1 month; the average annual sickness is 4½ days, and 58 out of 150 have had no sickness since they began to work at factory labour.

Of 25 throstle-spinners and 16 doffers, the average annual sickness is - - - - - 3½ days.
58 employed in the mule spinning-rooms ditto 5½ —
53 ditto - carding-rooms ditto 4½ —

Sleddon and Son's Mill, Park Lane.

One hundred and thirty-six persons, between 11 and 18, are employed in this mill; of whom 74 are males and 62 females. The average age of these 136 persons is about 13 years and 5 months; the average age at which they came to a factory is 10 years, and the average period during which they have been employed is about 3 years and 5 months; the average annual sickness is 2½ days, but if we deduct one case of sickness, protracted for 1½ year, the average annual sickness does not reach 1¼ day.

Of 45 employed in the throstle-rooms, they have worked on an average of 3¾ years, and have had 5¼ days average annual sickness; but deducting the protracted case of 1½ year, the period will scarce exceed 1 day per year; of these 45, 14 have had no illness since they went to a mill.

Forty-four have worked in the carding-rooms on an average 3⅓ years, and the annual sickness averages 2¼ days; of these 44, 28 have had no sickness.

Forty-one employed in the mule rooms, give 3⅝ years as the average of their period of working in a mill, and the annual sickness averages little more than ¾ day.

This mill stands on an airy elevated situation, at the north side of the town; one side of it fronts the sea, and the other the open country. This circumstance may account in part for its healthiness.

Green's factory contains only 8 persons, to whom I have given certificates, and they are all above 11 years old. The card-room is the only part of this mill which I have seen, and in it the air is so loaded with fluke from the dustiness of the cotton, and the want of ventilation, that it is difficult for a person unaccustomed to it to respire.

Stephenson and Lambert's factory contains 49 persons under 18 years of age, only two of whom are under 11.

Walker's is a small linen factory containing only 9 persons between 11 and 18 years of age.

Mr Riley's Factory, Fishwick.—Ninety-five persons in this mill have obtained certificates, of whom 44 are males and 51 females. The average annual sickness in this mill is 2¾ days. Of 29 persons employed in the carding-room, the average annual sickness is 3¼ days; 10 of whom have had no sickness since they came to a mill. Of 46 who work in the spinning rooms, the average annual sickness is 2 days; 18 of whom have had no sickness since they were first employed. Of 17 weavers, the average annual sickness is 2⅓ days; 5 of whom have had no sickness since their first employment in a factory.

The average length of time the young persons under 18 years of age have worked in a mill is nearly 4¼ years. The average age at which they began to work in a factory is 9½ years.

Swainson, Birley, and Co's. Mill, Fishwick.—In this mill, I understand there are about 1200 persons employed. I have given certificates to 433, between 11 and 18 years of age; none are employed under 11; of these 433, 117 are males and 256 females; 302 are between the ages of 13 and 18; 69 between the ages of 12 and 13; and 62 between 11 and 12.

In what Department employed.	Number.	Between 13 & 18.	Between 12 & 13.	Between 11 & 12.
Carding-rooms, - -	118	83	16	19
Piecers, roving and bobbing putters in,	85	51	16	18
Throstle-spinners, - -	96	66	25	5
Doffers, - - -	10	6	1	3
Weavers, - - -	55	55	—	—
Other departments, - -	69	—	—	—

The average age of young persons, whom I have examined in this mill, is about 14 years (14 years and 1 month;) the average period, during which they have been employed in a mill is nearly 4 years (3 years and 10 months;) so that the average age at which they began to work in a mill would be 10 years; of the 433, 63 began to work in a factory before they were 9 years old; of these, 48 began to work when they were between 8 and 9 years old; 13, when between 7 and 8 years old; and 2 between 6 and 7 years old; 60 children in this mill have worked less than a year in a mill.

Of these 60,

43 have had no sickness.

1 has lost through sickness - -	¼ day
3 have ditto - ditto - -	½
1 has ditto - ditto - -	¾
3 have ditto - ditto - -	1
1 has ditto - ditto - -	1¼
3 have ditto - ditto - -	3
2 ditto ditto - ditto - -	4
1 has ditto - ditto - -	6
4 have ditto - ditto - -	7
1 has ditto - ditto - -	9
1 ditto ditto - ditto - -	10
3 have ditto - ditto - -	14
2 ditto ditto - ditto - -	28
1 has ditto - ditto - -	42

averaging 4¼ days each.

Sixty have been employed between 1 and 2 years, and of them 29 have never lost any time through sickness; the average rate of sickness among these 60 is seven days, or 3½ days per annum. Sixty have been employed between 2 and 3 years; of these, 18 have had no sickness, and the average period of sickness is 24 days, or 8 days per annum. This average is very high, owing to four cases of protracted diseases occurring amongst the number, which diseases are not attributable to the nature of the children's employment.

Sixty-six have been employed between 3 and 4 years; of these, 18 have had no sickness in that period; the average sickness is 16½ days, or about 4 days per annum; among this number occurs one case of disease protracted for one year, and another for half a year.

Fifty-four have been employed between 4 and 5 years; of these, 9 have had no illness; the average period of sickness among these is 19½ days, or about 4 days per annum. Thirty-nine have been employed between 5 and 6 years; of these, 8 have had no illness; the average period of sickness of these persons is 17½ days, or less than 3 days per annum. Thirty have been employed between 6 and 7 years; of whom 4 have had no illness; the average time lost by sickness among them is 30½ days, or about 4½ days per annum. This average is greatly increased by two cases, one of 168 days duration, and another which lasted for half a year.

Twenty have been employed between 7 and 8 years; of whom 3 have had no sickness. The average period lost is 58¾ days, but one case must be deducted, as the person was sick for two years; this will leave the average 21¾ days, or less than 2¾ days per annum.

Nine have been employed nearly 9 years; of whom 1 has never suffered from sickness. The 9 average 8½ days each, or less than one day per annum.

Three have been employed 10 years, averaging 59 days sickness, or $5\frac{5}{4}$ days per annum; 1 has been employed 11 years, and has had 14 days sickness, or about $1\frac{1}{4}$ day per annum; 1 has been employed 12 years, and has had 7 days sickness, or little more than half a day per annum.

The average annual sickness, according to the period the persons have respectively been employed, will stand

1 year, $4\frac{1}{2}$ days.	5 years, 4 days.	9 years, 1 day.
2 years, $3\frac{1}{2}$ days.	6 years, 3 days.	10 years, $5\frac{5}{4}$ days.
3 years, 8 days.	7 years, $4\frac{1}{2}$ days.	11 years, $1\frac{1}{2}$ day.
4 years, 4 days.	8 years, $2\frac{5}{4}$ days.	12 years, $\frac{1}{2}$ day.

I am aware that the latter averages are formed from data too scanty to justify a decided conclusion, but, so far as they go, they by no means establish the position that some would assume, that factory labour is very injurious, if not incompatible with health. To establish this position, it would be necessary to show that disease increases with the duration of labour. The reverse appears to be the truth if any reliance can be placed on the evidence which I have adduced, for the accuracy of which I pledge myself, as far as a careful investigation can justify.

ART. XI.—*Addition to the Paper of Mr Ingleby on Malposition of the Ovaria, Bladder, and Urethra.*

AN impediment to the intercourse of the sexes may also be occasioned by a protrusion of the bladder into the vagina. Under an extreme degree of protrusion, the vagina will be completely occupied by the tumour, which may even appear externally; but an obstruction of so formidable a character has only once occurred within my observation. Minor degrees of protrusion arise not unfrequently. It may probably be thought that a vesico-vaginal tumour of circumscribed dimensions, cannot produce the impediment just alluded to; but I am perfectly assured that it may. Let it be recollected that the inconvenience is relative, or mainly so at least, since the tumour will vary materially in its bulk according to the amount of urine it may chance to contain at the moment. Without presupposing either an imaginary grievance or peculiar fastidiousness of mind, it has been a matter of conviction with the parties interested, that an obstruction had formed in the vagina, varying both in bulk and amount of elevation, but not entirely disappearing at any time; and this obstruction has proved to be the bladder. An apt illustration may here be mentioned. The parties, moving in the most respectable sphere of society, had been married five years, but had not had a family. During the first four years neither difficulty nor obstacle presented itself, but soon after this a positive impediment arose, and my opinion was solicited. I ascertained that the vaginal canal was considerably obstructed by a soft but bulky tumour, consisting of the bladder partially filled with urine, and which had fallen over the uterine orifice like a curtain. On the discharge of the urine the tumour sensibly diminished; but a very unnatural protrusion still remained to be removed, as I believe it will, by the resources of art.

PART II.

CRITICAL ANALYSIS.

Art I.—*Transactions of the Medical and Physical Society of Calcutta, Volume the Sixth.* Calcutta, 1833. 8vo, Pp. 509.

This volume contains a considerable variety of interesting and important information on the Medical History of India. The papers of which it consists may be conveniently distinguished into the following four orders:—Those relating to Medical Topography; those relating to Medical Pathology and Therapeutics; those relating to Materia Medica; and those relating to Surgical Pathology and Surgery.

I. On the subject of *Medical Topography*, we find the following three papers. 1*st*, On the Climate of Bengalore and the prevalence of Hepatitis at that station, by Dr J. Mouat, of the 13th Light Dragoons. 2*d*, Sketch of the Medical Topography and prevailing diseases of the Natives of Gowhattee by Mr John Leslie; and 3*d*, on the Climate of Canton, as a residence for Invalids from India, by Dr Pearson, Surgeon to the Factory there. Of these we shall give a brief abstract.

It appears that, previous to the discovery of the Neilgherries, (Med. and Surg. Journal, Vol. xxxv. p. 184,) Bengalore or Bengalura, as it ought to be named, was regarded as the Montpellier of the Madras station, and it still retains a high character for salubrity. Placed in north latitude 12° 57′, and east longitude 77° 46′, it possesses a temperature ranging between 62° and 84°, and occasionally 87°. The province of Mysore, of which it is the capital, extends between the 11th and 15°th of north latitude, is a table land nearly 3000 feet above the level of the sea, inclosed by the eastern and western Ghauts, 140 miles in average breadth, and 210 in length, and is surrounded by the British possessions. The highest part of this table land, of the mean height of 3000 feet, and forming an area of 50 miles by 60, includes the station of Bengalore, with Nundrydroog, Colar and Oosoor, is comparatively cool, and though fertile where cultivated, is hilly and barren in general aspect. It gives rise to numerous streams, which, as they unite and descend, form the various rivers so distinguished by their rapidity, as the Cauvery, Toomboodra, Panoor, Vedowatti, &c.

The geological structure of this district is chiefly primitive. The rocks are granite or gneiss, consisting of felspar and quartz, with a small proportion of green mica. Stratified masses of gneiss, hornblend, and primitive greenstone appear in many places. But the general disposition of the rocks is vertical, and often very confused and irregular. Slight earthquakes have been often felt, and from this circumstance, with the vertical and irregular disposition of the rocks, Dr Mouat is inclined to regard the country as of volcanic character. In some places are found calcareous nodules called *Kunkar*, which, on being burnt, form excellent lime. These nodules Dr Mouat represents to be formed by deposition from water, which he thinks must contain carbonic acid, to keep the lime in temporary solution.

In many parts the earth or soil possesses the property of consolidating itself into a hard rocky substance. As it consists of a species of ferruginous clay mixed with fragments of quartz and disintegrated particles of weakened granite, when moistened and pressed together, it is consolidated into firm walls or roads of the most durable nature. It is manifest that this change depends chiefly on the presence of the iron, which in this case, as in the Roman cement, Puzzuolana, and similar compositions, speedily becomes concreted into a hard impenetrable mass.

The great deficiency in the district is water, which can be obtained only by means of wells and tanks or reservoirs, the capability of producing which depends always on the locality. The most usual method of forming a tank or reservoir is by carrying an embankment across a valley, when the influent streams, thus dammed up, speedily form a sheet of water, from which supplies are issued to irrigate the fields below the valley. From the limited nature of this supply, however, and the impracticability of irrigating the high lands, unless during the monsoons, the greater part of this district remains, and must remain, uncultivated.

Notwithstanding these natural difficulties, however, and the especial one of Bengalore or Bengalura being placed on the crest of an elevated and barren rocky ridge, industry, aided by a fine climate, has triumphed over the natural sterility of the soil, and given its vicinity and the space occupied by the cantonments, two miles to the east of Bengalore, the appearance of a highly cultivated garden. Vegetation is rapid and exuberant; and all the vegetable products of the temperate, the warm and tropical countries, may be seen in the same circuit thriving in the greatest luxuriance. The cyprus and vine, the apple and pear, the English oak and the Malabar teak, are equally vigorous and prolific; while the guava and pine-apple, the shaddock and Avocado pear, evince the intertropical position of the country. Even the vicissitudes of the seasons are scarcely perceived in this elevated equatorial region, and the fictions of the poets seem to be realised in the fact of an incessant spring. The fall of the leaf, so conspicuous in other countries, is here scarcely perceptible, the old leaves remaining to be displaced by young buds, which rapidly expand, so as to give the appearance of evergreen foliage.

The climate of this elevated table land has been already allowed to be good. Elevated position, indeed, counteracts the influence of its geographical situation; and the atmosphere, which on the coast would be attenuated to an insufferable degree with heat and loaded with humidity, is here pure, dense, elastic and dry, save when it is cooled and refreshed by the showers of the monsoons.

As a means of maintaining and even restoring health, the climate of Bengalore is represented by Dr Mouat to be excellent. Though its coldness may be unfavourable to asthmatic or delicate persons easily affected by changes of temperature, or those labouring under actual change of structure in the internal organs, it is said to predispose neither to croup, hooping-cough, or phthisis, nor to retard the recovery of those affected with syphilis. Though remittents prevail in the jungles and at Seringapatam, the climate is said not to occasion agues. Hepatitis, however, is allowed to be extremely prevalent; but this, Dr Mouat contends, is the result of exposure to the sun and intemperance. With the limitation now specified, the climate of Bengalore affords, according to Dr Mouat, a safe retreat, and a happy change from the heat of the Carnatic, or the relaxing effects of a residence at Malabar.

The prevalence of sickliness, however, appears, as in other countries, to vary with the season of the year. In December 1829, the regiment to which Dr Mouat was attached, was extremely healthy; and though the indulgence at Christmas and New-Year sent many to hospital, it was the commencement of the hot dry weather in March that principally augmented the sick list. In April, when the thermometrical heat varied from 73° to 87°, and the commencement of the first rains was indicated by frequent showers, and heavy falls of rain with thunder and lightning, the sickliness appears to have been great; and the admissions to hospital from acute cases amounted to 42, as presented by the subjoined table, which is useful in giving a compendious view, not only of the respective forms of disease, but the treatment pursued.

Table of Acute Cases.

No.	*Names.*	*Date of admission*	*Diseases.*	*No. of times bled.*	*No. of oz. drawn.*	*Leeches applied.*	*Quant. of calomel.*	
1.	John Cortiett,	Apr. 1,	Dysenteria acuta,	1	24	0	114	
	William Mitchell,	3,	Catarrhus acutus,	1	24	0	16	
	Michael Mahar,	4,	Febris cont. com,	1	20	12	32	
	James Reynolds,	4,	Do.	1	25	12	27	
5.	Thomas Herbert,	4,	Do.	2	50	0	25	
	Rob. Devonshire,	5,	Do.	2	36	0	61	
	John Kelly,	5,	Pneumonia,	1	24	18	4	} *
	Edward Davis,	8,	Apoplexia,	1	32	24	185	
	Jonathan West,	9,	Rheumatismus acutus,	1	30	0	49	
10.	William Condon,	9,	Diarrhœa,	0	0	24	421	
	Christ. Devoy,	10,	Dysenteria acuta,	2	36	16	70	
	Thomas Black,	10,	Do.	1	20	0	26	
	Patrick Coulan,	10,	Rheumatismus acutus,	3	52	0	210	
	Samuel Moore,	10,	Hepatitis acuta,	1	16	24	87	
15.	Robert Whisken,	11,	Dysenteria acuta,	1	20	0	30	
	George Smith,	13,	Febris. cont. com.	1	24	31	41	
	William Godbier,	14,	Do.	2	54	24	111	
	James Pemberton,	14,	Do.	1	25	72	76	
	John Moore,	15,	Do.	2	46	40	90	
20.	Peter Cassady,	15,	Hepatitis acuta,	3	64	90	112	
	Tho. Marshman,	16,	Febris cont. com.	2	54	48	50	
	William Elliott,	16,	Pneumonia,	2	48	12	60	
	Richard Brennon,	17,	Dyspepsia,	0	0	0	26	
	Samuel Plant,	17,	Hepatitis acuta,	3	72	60	40	
25.	James Carroll,	17,	Do.	3	60	20	60	
	James Garvey,	18,	Febris cont. com.	1	20	0	69	
	James Maclin,	18,	Do.	3	60	0	30	
	Joseph Balls,	20,	Do.	0	0	0	25	
	John Davis,	21,	Epilepsia,	1	26	18	30	
30.	William Graham,	22,	Hepatitis acuta,	4	72	15	162	
	James Smith,	22,	Dysenteria acuta,	2	46	24	110	
	Henry Tottman,	23,	Febris cont. com.	1	24	12	18	
	Patrick Brophy,	23,	Do.	1	30	0	12	
	Robert Oldham,	25,	Splenitis,	1	24	74	20	
35.	George Roberts,	27,	Hepatitis acuta,	5	100	0	60	
	Ewd. M'Dermott,	27,	Do.	3	62	48	130	
	James Rose,	27,	Do.	2	46	36	126	
	Charles O'Neil,	28,	Do.	2	48	76	43	
	Walter Reily,	28,	Febris cont. com.	2	38	24	80	
	William Brown,	28,	Dysenteria acuta,	2	40	0	74	
	James Cook,	28,	Rheumatismus acutus,	1	24	0	0	
42.	Sammuel Connell,	28,	Ophthalmia,	0	0	8	3	

From this we give the following statement of the numbers of the several diseases prevalent during the month of April 1829.

	Cases.		*Cases.*
Common continued fever,	15	Dyspepsia,	1
Acute inflammation of the liver,	9	Splenitis,	1
Acute dysentery,	6	Apoplexy,	1
Acute rheumatism,	3	Epilepsy,	1
Pneumonia,	2	Catarrh,	1
Diarrhœa,	1	Ophthalmia,	1
		Total	42

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* Died 8th April.

This great prevalence of disease suggests to Dr Mouat the inquiry into the causes by which it may have been produced; and the general result of his observations may be stated to be, that all the causes of sickliness are referable to exposure either to intense solar heat during the day, or the deleterious chills of the night, without sufficient clothing, to hard duty, to intemperance, especially in the use of intoxicating liquors, and to inattention to the transitions from intense meridan heat to the chills of the evening and midnight air.

The acute affections most usually prevalent among the European troops, we presume, in the Mysore, are dysentery, fevers, *hepatitis*, and rheumatism.

Of these, though fevers must be allowed to form the largest proportion of the sick lists, they are by no means the most frequent causes of mortality. It appears also that the most prevalent form of fever is the continued,—ague being very rare, and remittent not very common. The records of the corps, Dr Mouat informs us, show that, during a residence of eight years at Bengalore, six cases only of intermittent took place, viz. four tertians and one quartan in 1823 and one quotidian in 1824.

Of 121 cases treated two died,—one a case of remittent fever in a corporal who had been eleven days under the disease without medical assistance, the other in consequence of abscess of the brain.

The treatment pursued was strictly antiphlogistic, viz. blood-letting, general and local, cold, blisters, purging by means of calomel, &c.

Hepatitis, however, is the great scourge of Europeans at Bengalore and in the Mysore; and its prevalence and fatality are so striking as to have given rise to various speculations regarding the cause among the different physicians who have observed the fact in India. The fact may be regarded as established by the returns given in the work of Mr Annesley, according to which it appears that in Mysore, *hepatitis* is at the rate of 30 per cent. in the general sickliness, whereas in most of the others it varies from 6 to 21 per cent. In the Presidency and the central district of the Madras division, it amounts to 34 and 35 per cent. So far as we can comprehend the train of reasoning pursued by Dr Mouat on this head, he does not admit that the prevalence of this disease is referable principally to exposure to intense heat, but allows the influence of such causes as frequent or habitual intoxication, or exposure to cold after the system has been overheated and enfeebled, and extremely hard military duty. To this conclusion Dr Mouat is led chiefly by the consideration, that the mean annual temperature of Bengalore does not exceed 74°, and by the fact, that the disease does not affect females and children or even natives in the same extent in which it affects the male Europeans.

In order to communicate some notion of the comparative prevalence of the disease among the two sexes we give the following table, reduced and abridged from two of those given by Dr Mouat.

	Men.	*Cases.*	*Deaths.*		*Women.*	*Cases.*	*Deaths.*	
1820,	669	99	6	16	63	7	2	11. 7
1821,	647	81	4		60	6	1	
1822,	656	75	6		61	5	1	
1823,	647	101	4		54	0	0	
1824,	651	113	6		49	1	1	
1825,	648	89	7		56	3	0	
1826,	630	89	2		48	2	0	
1827,	586	159	10		45	5	0	
1828,	525	89	4		70	2	1	
1829,	566	71	8		71	2	0	
1830,	631	75	3		65	2	0	

From the data furnished by these tables it may be confidently inferred that there are in the lives of the male sex in India certain circumstances which peculiarly predispose to attacks of *hepatitis* more than in those of females; and it is difficult to perceive what these circumstances are, unless they consist in the greater and more frequent and reckless exposure to vicissitudes of weather, and atmospheric temperature, and the concomitant excesses in which men habitually or frequently indulge.

That the disease is not endemic Dr Mouat infers not only from the fact of its sparing females and children, but also from that of its not showing much tendency to attack natives. From another return also he shows that between the 7th of May and the 20th June, in the 13th Dragoons, with a strength of 606 men, 21 cases of fever, 20 cases of *hepatitis*, and 81 of dysentery took place, whereas in the 1st or Royal Regiment of Infantry, with a strength of 660 men, only 7 cases of fever, 7 cases of *hepatitis*, and 18 cases of dysentery, were admitted to hospital during the same period. As he maintains that in the virtues of sobriety and regularity the Dragoons were fully equal to the Royals, he seems inclined to attribute this large difference in sickliness to the comparative difference of the duties, the exercise, and the mode of clothing the soldiers in the former service. We do not perceive that the difference is even thus very satisfactorily explained.

The column exhibiting the quantities of calomel administered must be interesting to Europeans unaccustomed to mercurialism on the great scale. It might become a just question to what extent the reception of such large quantities of the mineral might not operate as a cause of disease.

The second paper is *a Sketch of the Medical Topography of Gowhattee, and an Account of the Diseases of the Natives in that Station.* By Mr Leslie.

Gowhattee or Ouragattee, the capital of Lower Assam, is situate on the left or southern bank of the Burrampooter, in N. Lat. 26° 11′ 30″, and E. Long. 97° 6′. It is 66 miles east from Goalpara, and 500 miles from Calcutta, the ordinary mode of communication being by water.

The Burrampooter, opposite the town, is during the rains a mile in breadth; but in the cold season, an irregular bank of sand intersected with rocks, a quarter of a mile broad, is left dry.

The rise of the Burrampooter is irregular; it is lowest about the end of December, or in January, and continues nearly stationary till March, after which it begins to swell, and increases during April, May, and June, when the first rains take place, attaining its greatest height sometime in August. During September it usually falls, and again rises several feet; and in October and the subsequent months it falls rapidly. The average rise is about 30 feet. The rapidity of the current is in the cold season, from two miles to two miles and a-half in the hour; the average rate during the rains is three miles; and the greatest rapidity is four miles and a-half. Its depth, when lowest, is opposite to Gowhattee, from three to four fathoms.

Of an area about three miles in circumference near Gowhattee, two-thirds of the surface is submerged during the wet season, in consequence of the overflowing of extensive jheels behind the town. The site of most of the houses is swampy; and deep ditches containing stagnant water extend on each side of the road. Behind the town further south, the ground rises into hills varying in height and direction, but all thickly wooded, yet displaying in certain parts a large bare surface of granite rock.

On the north side of the river the view is more open, and, though the hills vary in height, all pursue a north-east direction, —rising gradually till at thirty miles off they merge in the lower Bhootan range. In clear weather the snowy summits of the Himalayahs are distinctly seen at the distance of 100 miles.

The climate is moist, and dense fogs prevail along the banks of the river in the mornings of the cold season, *i. e.* from the end of October to March. The winds at this season are easterly, and this, indeed, is the prevailing direction of atmospheric currents in Assam.

The range of the thermometer is, during the cold months, from 58° to 72° in the day, and at other seasons from 80° to 86°, seldom rising in the shade to 90°.

The soil in the immediate vicinity of Gowhattee is a dark-red mould, varying in thickness from a few inches to several feet; along the banks of the river and in the valleys between the hills, it is entirely alluvial; at a little distance the soil is principally a red clay, washed down from the hills, and resting on coarse sand, which chiefly forms the bed of the river.

The products are rice, pulse, Indian corn, mustard seed, sugar-cane, cotton, poppy, tobacco, and some ordinary vegetables. The areca and cocoa palms are cultivated, but their produce is scanty.

Of poppy the white variety is most generally cultivated. The plant ripens in February, and the juice of the wounded capsule is absorbed by a piece of old rag, which when saturated is rolled up and enlarged by the addition of successive layers, till a mass about a *seer* in weight is obtained. In this state, in which it is denominated *Kanee*, it is used in great excess by the Assamese, either by drinking a watery solution of the impregnated rag, or smoking the inspissated extract obtained by evaporation. *Kanee*, when cheapest soon after harvest, sells for 8 rupees per seer; but at a later period fetches double the price.

The breeding of silk-worms, and the cultivation of the mulberry-tree, has been practised for some time in Assam; but the quantity of silk produced is still inconsiderable.

The herds of cattle, though numerous and large, are of an inferior breed, and afford a scanty supply of milk. Tame buffaloes are kept partly for milk, partly for the purposes of husbandry. The country ponies appear to be a degenerate breed from the Bhootan race. Sheep scarcely thrive; but goats are numerous, and are fattened by castration. Hogs and poultry are abundant.

The population of Gowhattee is estimated at 6000 persons, there being about 1120 houses. The space which it occupies is irregular, but may be upwards of two miles in length, running parallel with the river, and rarely of much breadth, and with the houses occasionally separated, occasionally closely crowded together. The houses consist of wooden posts, bamboos, reeds, matting and grass roofs; and only two buildings, the residence of the magistrate, and the record-office, are of brick. As little attention is paid to draining, and almost none to cleanliness, their abodes are extremely damp and filthy; and invariably after the rains, the ground and floors are extremely dirty and wet.

The jail, to the inmates of which the observation of Mr Leslie was principally directed, is a large well-constructed building, situate on the bank near the western extremity of the town,—capable of accommodating from 300 to 400 persons. Attached to this establishment is the jail hospital, placed at some distance on a piece of elevated ground near the angle formed by the river, and capable of accommodating 100 individuals.

The poorer inhabitants of Gowhattee are badly lodged, clothed, and fed. Their raiment consists of two body cloths and a wrapper, both of inferior quality; their bed is a piece of mat spread on the ground; and their food consists chiefly of rice seasoned with *khar*, an impure carbonate of potass, procured by elutriation from the ashes of their wood fires.

The arts, both useful and mechanical, are in a very low and backward state; and agriculture has made little progress. Wheat is not reared, though the soil is in many places well adapted to its cultivation. The manufacture of sugar is unknown; and the sugar-cane furnishes the Assamese only with jaggery or treacle.

Lower Assam, the country of which Gowhattee is the capital, is bounded on the north by the Bhootan hills, on the south by the Garrow and Kassyah ranges, on the west by the Monass river, and on the east by Bissnauth, comprehends a space of about 4100 square miles, and contains 350,000 inhabitants. These, though comprehended under the general denomination of Assamese, consist of many separate tribes, distinguished partly by religious peculiarities, partly by the species of occupation in which they are mostly engaged. All are more or less agricultural; but the Jogees also weave and breed silk-worms; the Dooms are fishermen; the Koomars and Hieras fabricate earthen vessels; and the Cacharies breed hogs, weave mats, and distil an intoxicating liquor from rice. All the native Assamese are rather short in stature, and by no means handsome, either males or females. But the Ahums, a higher class, who are reported to be the descendants of the conquerors of Assam in the fourteenth century, and to have proceeded from the eastern country bordering on China, are generally a taller and fairer race.

The Assamese are represented to be timid, apathetic, ignorant, and immoral to a great degree,—addicted to the use of opium to intoxication, and thereby, it is said, prone to thieving and other crimes.

The experience of Mr Leslie as to the diseases prevalent among this race applies chiefly to the cases admitted into the Jail Hospital; and these consisted of fevers, bowel-complaints, dropsy, ulcers, venereal and cutaneous affections.

Among fevers, intermittents are prevalent in the swampy parts of the town, and are frequently accompanied with enlarged spleen. They appear to yield readily under the usual treatment. Remittents, which are not unusual, proved in a large proportion of cases fatal,—death being preceded by delirium or coma. To counteract this termination active remedies were required.

Fevers are said often to introduce an intractable form of bowel-complaint, which constitutes a large proportion of the mortality of the jail. The disease consists in inflammation and ulceration of the large intestines; and so insidious is it, that in many cases emaciation has advanced to a great degree, and much ulceration of the colic mucous membrane has taken place, before the patient applies for assistance. In such circumstances the patient has no pain or prominent or urgent complaint, even scarcely allows that he has loose stools, and merely feels weak and wastes progressively.

Mr Leslie gives an instructive tabular view of forty-seven fatal cases of this disease, with the appearances upon dissection,—from which it results that every variety of lesion of the mucous membrane of the colon may take place, from a mere inflammatory blush or a purulent secretion lining the membrane, to abrasion, ulceration various in depth and extent, or even to mortification. In three cases only were the small intestines diseased; in two of these there was mere inflammatory redness, with an ulcerated patch in the rectum of one (27,) and in the third (17) while the mucous membrane of the small intestines was pale and ulcerated, that of the colon was healthy. In those cases in which, without much vascularity, the mucous membrane of the colon was studded with numerous minute ulcerations, these, there is good reason to believe, must have been the result of inflammation attacking chiefly the muciparous follicles of the colon, and proceeding to ulceration.

When this disease has once attacked an Assamese, it generally proceeds invariably to the fatal termination. The patient wastes rapidly, with thirst, loss of appetite, smooth red tongue, frequent pulse, and hot or at least dry skin. Œdema of the extremities is rapidly followed by general anasarca, and death takes place amidst the most extreme degree of debility.

Mr Leslie further allows that in several cases of this disease in which death speedily took place, no appreciable lesion in the intestinal mucous coat could be detected. This circumstance constitutes a serious difficulty in making any statement as to the average duration of the disease, which may vary from a few weeks to several months.

The prevalence of this and similar incurable diseases Mr Leslie ascribes to the insalubrious locality of the prison and its hospital, and the practice of smoking *kanee* or opium. To obviate the first cause of sickliness and mortality, at the recommendation of Mr Leslie, an hospital was, in 1830, erected in a more elevated, dry, and salubrious situation, while in the meantime several of the most serious cases were removed to an hospital erected on the banks of the river in an open place about eight miles below Gowhattee. It was at the same time recommended that the prisoners should be frequently inspected by the native doctors, and the magistrate ordered that all cases, however slight, should be immediately sent to hospital. To counteract the second cause of sickliness, the introduction of *kanee* was strictly prohibited; messing at the same time was established among the prisoners; and in the worst cases cots and additional blankets were supplied.

In conducting the treatment of this species of intestinal disease, we are happy to observe, that the experience of Mr Leslie agrees with that of Mr Twining in bearing testimony to the efficacy of the antiphlogistic method, and condemning that by opium and astringents. Opium, indeed, in any shape, he found injurious, and its palliative effect even inconsiderable. Blood-letting, on the contrary, whenever pain and soreness were combined with frequent, small, sharp pulse, was always beneficial. Next to this, ipecacuanha alone, in doses of three or four grains, with soap, for want of bitter extract, was employed without aggravating sickness. Mild laxatives, as castor oil or rhubarb, were essential in almost every case; and in a few, after the requisite depletion, calomel with opium or blue pill and Dover's powder, were beneficial.

The dropsical affections were sometimes dependent on the bowel complaint; but in others the effusion was indicative of chronic disease of the liver or spleen.

In the former case Mr Leslie seems to have trusted chiefly to the removal of the primary disorder; and in the latter, to the employment of diuretics and deobstruents.

In the cases of rheumatism the pains were counteracted or alleviated by moxa; and when the affection was more general, *colchicum*, if efficient, was employed with benefit. It appears that the colchicum supplied in India is often inert.

Ulcers, which form a large proportion of the cases requiring treatment, were generally the effect of the fretting produced by badly made fetters, and sometimes of the spreading of an affection called impetiginous, to which the Assamese are very subject.

Itch, it seems, is very common. The cutaneous disease most frequent, however, is the *Daud*—an affection commencing as papular, and terminating in a scurf or scab, which is very itchy during the rainy season, and is particularly troublesome at night. When established, it appears in the shape of circumscribed patches with an elevated border, but at one side of which the eruption is drying, while at the other it is advancing with new *papulæ*. By coalescence they may occupy the whole person. It appears to be regarded with indifference; and the natives seldom request assistance for its relief.

The two following tables will afford a compendious view of the rate at which disease affects the lower population of Gowhattee, the comparative sickliness of different seasons, and the degree of mortality produced.

TABLE of the Diseases admitted into Gowhattee Hospital during 1830.

January 1st, 1831.

	Remaining Jan. 1.	*Admitted during* 1830.	*Total.*	*Discharged.*	*Died.*	*Remaining 31st Dec.*
Cholera, - -	0	3	3	1	2	0
Diarrhœa, - -	8	41	49	30	16	3
Dysentery, - -	7	41	48	15	27	6
Dropsy, - -	3	18	21	10	11	0
Fevers, - -	6	163	169	118	36	15
Fever and diarrhœa, -	9	4	13	3	8	2
Ditto and dysentery, -	0	12	12	2	8	2
Ulcer and diarrhœa, -	2	12	14	3	6	5
Ditto and dysentery, -	0	32	32	7	17	8
Ditto and dropsy, -	0	5	5	0	4	1
Ditto and fever, - -	0	8	8	5	1	2
Ophthalmia and liver disease,	0	1	1	0	1	0
Mental derangement, -	0	1	1	0	0	1
Rheumatism, - -	0	18	18	13	2	3
Rheumatism and dysentery -	1	2	3	0	1	2
Small-pox, - - - -	0	5	5	0	2	3
Abscess, - - - -	0	8	8	7	0	1
Contusions and wounds, -	0	6	6	4	1	1
Gangrenous ulcers, -	2	0	2	0	2	0
Impetiginous affections, -	0	9	9	9	0	0
Leprosy, - -	0	1	1	0	0	1
Ophthalmia, - - -	0	3	3	3	0	0
Ulcers, - - - -	7	131	138	105	9	24
Venereal, - - - -	0	16	16	13	0	3
Other complaints, -	0	10	10	6	1	3
Totals, -	45	550	595	353	156	86

TABLE showing the number of Admissions, Deaths, and Discharges, during each month of 1830, at Gowhattee.

January 1st, 1831.

	Remaining on 1st of each month.	*Admitted during each month.*	*Total number during each month.*	*Discharged.*	*Died.*	*Remaining at end of each month.*
January, - -	45	31	76	6	20	50
February, - -	50	18	68	15	4	49
March, - -	49	30	79	15	10	54
April, - -	54	61	115	17	7	91
May, - -	91	54	145	44	8	93
June, - -	93	42	135	30	10	95
July, - -	95	67	162	26	13	123
August, - -	123	52	175	37	33	105
September, - -	105	47	152	11	16	125
October, - -	125	61	186	40	12	134
November, - -	134	37	171	37	8	126
December, - -	126	50	176	75	15	86
Totals,		550		353	156	

Total number of individuals apprehended in Lower Assam during the year 1830,	4,622
Average number of prisoners in Jail throughout the year,	580
Average number of sick in hospital throughout the year,	91.7
Ditto ditto monthly admissions,	45.8
Ditto ditto ditto discharges,	29.4
Ditto ditto ditto deaths.	13.0

Proportion of sick to prisoners, 15.8 per cent.
Ditto deaths to sick, 26.3 per cent.

The third paper of the kind now under consideration is, *On the Climate of Canton as a Residence for Invalids from India*, by Dr A. Pearson.

Dr John Clark of Newcastle was the first who gave any distinct account of the climate and diseases of China, in a work published first in 1773 and again in 1792; and in many respects the observations of Dr Pearson are principally confirmations of those originally made by Dr Clark.

Though of the two cities in China to which Europeans are permitted to have access, Macao is undoubtedly the most salubrious, yet Canton is believed to possess certain facilities, if not advantages, which may induce the Indian invalid to visit it in preference.

Canton is situate 80 miles higher up the river Ta-Ho than Macao, on the left bank, amidst alluvial land, which at this part is rather flat, and therefore marshy, and is under active cultivation as rice ground. North of the city is a line of hills stretching from W. N. to E. S. E., approaching nowhere nearer to the bank than two miles. These hills afford good water;—that from the town being impure, brackish, and loaded with vegeto-mineral impregnations.

The account of the atmospheric and meteorological changes, which is given by Dr Pearson, shows that in all respects the climate is that of a tropical country.

The diseases we find very accurately to be those which originate from the twofold sources—a flat marshy situation and high tropical temperature.

Ague, for example, is endemial, though it is chiefly in the months of October, November, and December, that they assume the pure character of intermittents of the tertian or quartan type, and are amenable to the use of cinchona. The double tertian or quotidian is stated to be the most usual form. In the summer and autumn they are remittent in type, or even continuous and bilious in character. They then require more active and prompt measures.

Hepatic affections are frequent, especially where unfavourable habits concur. Dysentery, however, is most common, particularly in the chronic state, among invalids resorting to Canton from other places. The acute form of the disease terminates favourably most readily where opiates are not exhibited, and where the treatment is conducted by means of purgatives, ipecacuanha, and slight mercurialization by means of the oxides, interposing calomel merely as a purgative when indicated.

Though it has been repeatedly stated that the genuine malignant cholera of India visited China shortly after, Dr Pearson does not allow that this formidable distemper has at any time since its eruption in Jessore in 1817, appeared on the banks of the Canton river. He allows that cholera, such as it always appears and always has prevailed, within the tropics and upon their margins, has annually appeared in sporadic cases, sometimes mild, sometimes fatal; but he does not see reason to believe that any distemper resembling the Indian has yet visited the population of Macao or Canton. His reasons for this opinion are, in the first place, the very small mortality, the speedy cessation of the violent symptoms, and the rapid and complete recovery.

Epidemic disorders, especially small-pox, scarlet fever, and measles, are liable to appear in spring, from February onwards. Though the first of these is at all times a destructive disease, and in certain seasons is much more so than in others, its virulence and mortality are said to have received a decided check by the very general if not universal adoption of the practice of vaccination both at Macao and Canton, to which Dr Pearson says he has found the Chinese exceedingly favourable. The density of the population, Dr Pearson thinks, with the immunity enjoyed, affords a clear proof of the beneficial results of the practice, which, he adds, is rapidly spreading to other provinces, and has already reached the capital, Pekin.

The influenza, which has been so often represented to proceed from Cathay, Dr Pearson thinks may be an indigenous epidemic in that country. It appeared in 1829 in March, and in 1831 in October and November, and in March and April 1832 it was equally prevalent in the Island of Luconia.

Upon the whole, though in the summer months and in certain seasons more than others, congestive bilious fevers, sometimes highly aggravated, are frequent, the period from the end of May to the middle of August may, according to Dr Pearson, be deemed salubrious.

The class of invalids for whom a visit to Canton is best adapted are those whose health has been impaired by sedentary occupations in an insalubrious climate or season, by intemperance and irregularity, under the same circumstances, and still more decidedly those who have suffered from miasmatic fevers. Chronic fluxes not dependent upon organic change have apparently been removed during a residence at Canton. By its climate dyspepsia is alleviated, and dyspeptic hypochondriasis derives a brief respite to its symptoms. Chronic rheumatism, and the asthenic state consequent on severe mercurial courses, have been benefited by the same means.

In order, however, to insure as accurately as possible the salubrious and sanative influence of the Canton climate even in the maladies now specified, an indispensable condition is stated to be, residence restricted in most cases to the duration of the northerly monsoon, particularly the months of November, December, and January.

The climate of Canton, on the other hand, is injurious to all invalids with pulmonary affections, and, indeed, in whomsoever organic disease is combined with the presence of marked hectic fever. The author refers particularly to cases of a species of chronic flux with *aphthæ* and purging cachexy and hectic pulse, from India, in the Island of Luconia, and indigenous, as those in which the issue is generally unfavourable, and in which, consequently, the indication is to avoid the Canton climate.

The most eligible period for invalids arriving in China is immediately before the conclusion of the northerly monsoon, in order to insure a passage up the Chinese sea, without encountering the equinoctial storms. This is stated by Dr Pearson to be probably in the end of August or the beginning of September.

Upon the whole, it appears, from the account of Dr Pearson, that Canton is by no means a very eligible station for invalids labouring under any serious disorder of the viscera of the chest or belly, and it appears to be principally in those dynamic affections which are induced by intemperance and excessive indulgence in a tropical climate that it is beneficial. In such circumstances, there seems no slight reason to believe that the sea voyage is the great agent of benefit, and that the change of scene, and abstraction from the injurious or monotonous habits of a life of business, are the auxiliary means of relief.

II. Under the head of Medical Pathology and Therapeutics, the first paper which presents itself is *An Account of the Epidemic Catarrh which prevailed at Penang in July and August* 1831. By Dr T. M. Ward.

From this account it appears to have been a severe form of influenza, with well-marked catarrhal symptoms, and the harbinger, if not the incipient part of that comprehensive epidemic which in the spring and summer of 1832 spread over most of the European countries. Like that disease also, though not of itself fatal, it aggravated the symptoms of all pulmonary disorders, and was believed thus indirectly to have been the cause of death among many of the aged and infirm natives of Penang.

Dr Ward himself appears to have witnessed only seven deaths produced in this manner within the sphere of his experience; one in July, and three in August, among the aged and infirm inmates of the Chinese poor-houses; one case of a patient admitted into the Convict Hospital with symptoms of fever, who died in July, and two in the same place, in whom it assumed the symptoms of pneumonic inflammation, and terminated fatally in August.

In the hospital of the 46th Regiment, N. I., 60 cases were admitted between the 17th July and the 12th of August. The average duration of the disease in these cases was 5⅔ days; all recovered.

One patient, who had been for several months phthisical, sunk under the attack; but as the upper portion of both lungs was destroyed, it is probable that the influensa had merely accelerated the fatal event. In another case occurring in a Lascar, who had allowed the disease to proceed, and who died two days after admission, it is stated that extensive adhesions of the pleura had taken place, large abscesses existed in the lungs, and the bronchial tubes were filled with grayish muco-purulent matter.

The treatment appears to have been of the usual kind; emetics, cathartics, antimonial diaphoretics, diluents, and *pediluvium*. Sulphate of quinine was given in the intermittent form of the disease. Blood-letting was not used unless among Europeans, and where febrile symptoms were intense.

The disease made its first appearance at Penang about the 15th of July, when the wind was blowing uninterruptedly from the south-east, with occasional showers after a long tract of dry weather in June. It appears from the statement of a correspondent of the author at Soorabaya, in the Island of Madura, that it appeared there in the month of April previously, attacking every family, native and European, indiscriminately, and that it was most general in the department of Grissee in the month of March. It passed to Samarang in May, appeared at Singapore in the month of June, and at Malacca about the end of the month. From these facts, and from the circumstance of its not appearing at Batavia, Dr Ward infers that the disease travelled in the direction of the south-east wind, and was probably conveyed by the wind to the places which it visited.

The next article under the same head is entitled, *Some Account of the Bronchocele or Goître of Nipal, and the Cis-and Trans-Himalayan Regions*, by Mr M. J. Bramley.

No disease, perhaps, is so extensively distributed over the mountainous countries of Asia as Bronchocele; for it extends from the frontiers of Assam, (27° N. L. 91° E. L.) through Bijnee, Cooch Bahar, Rungpore, Dinayepore, Purnea, Tirhoot, and Betiah, along the northern boundary of Oude in Gorruckpore, Barraitch, Piliebeat, on the confines of Rohilcund to Hurdewar, (30° N. L. 78° 25 E. L.) at Yarkund, in the tract between the great wall and Zehol, in the Tibetan and the Mongolian districts, and in those round Lake Baikal, and in that of Kirensk on the Lena.

The valley of Nipal or Nepaul is an extensive tract in 27° N. L., elevated at least 4500 above the level of the sea, lying at the southern base of the eastern division of the Himalaya range, between that and the kingdom of Oude, with a diameter of about 16 miles.

Though broken into numberless irregularities, its surface is most extensively cultivated. It possesses three cities, Kathmandu, Bhatgang, and Patan, and 226 towns and villages. The number of houses in the valley is calculated, according to a recent census, at 41,798, of which the cities contain 21,116, in the following ratios, Kathmandu, 10,767; Bhatgang, 4700; and Patan, 5659. The population of the valley deduced from these data, and allowing seven souls to each house, would amount to 292586, which is believed to be below the real number.

Though bronchocele is frequent among the whole of this population, it is in certain towns and districts more prevalent than in others. The lowest rate among the inhabitants of the cities was 3½ per cent. for Kathmandu, and 4 per cent. for Bhatgang and Patan. According to calculations made of twelve of the small towns and villages, the average proportion of the disease was rather under 11 per cent.,—which from subsequent inquiries Mr Bramley is led to regard as representing the average proportion of the disease among the whole population.

In some villages in the neighbouring mountains, and on the borders of the valley, elevated from 500 to 2000 feet above the level of the valley, the disease is still more prevalent. At Phirphen and Mata Pirtha it was at the rate of 15, at Chitlong 40 per cent.; and at a small village named Carphu, situate on the crest of a mountain, of 53 inhabitants, 48 were affected with the disease, giving a prevalence equivalent to 90 per cent. These facts, combined with the statement, that the author has witnessed the disease in families who habitually reside on or near the summits of mountains not less than 7000 feet above the level of the sea, he employs to disprove the inferences drawn by Saussure, Foderé, and Georget, that the disease is peculiar to the lower valleys, and disappears as we ascend.

It is to be observed, on the other hand, that in certain localities the disease is almost unknown, though it may be extremely prevalent in the neighbourhood. Thus in the town of Sanchu, situate on an eminence, and surrounded by a luxuriant forest, which rises from a range of hills, by which it is bounded before and laterally, among a population of 3000, 600 persons were examined without presenting a trace of the disease, and Mr Bramley was informed that not above twelve persons were affected with it. At Loovhu also, a town situate on an open plain, and surrounded by cultivated grain fields, not more than two per cent. of the inhabitants were affected.

In India, the endemial prevalence of bronchocele first begins to betray itself in Hindostan. It appears on the left bank of the great Gundûk river among the inhabitants of the villages, sometimes very generally, in other instances very scantily. In proportion as the traveller approaches the foot of the Nipal mountains, the disease becomes more frequent; and in this district it is calculated by Captain Turner, that it affects one-sixth of the whole population, and in the tract denominated the Terrai or Terriani, especially adjoining to the great forest (Bhaber), scarcely an individual is exempt from the disorder. Some idea of the extent to which it prevails may be formed by the following tabular statement of the number of the population of three villages in the neighbourhood of Betiah, 50 miles from the foot of the hills.

Names of the villages.	*Number of inhabitants.*	*Number with Goître.*	*Number without Goître.*
Chouby,	234	65	169
Maha-deo,	236	103	133
Lal-Serai,	177	65	112
	647	233	414

Thus in a population of 647 persons, more than one-third were bronchocelic; and it may be added, that in the first two villages 14 children under 10 years of age, and in the third village, 2 children under that age were affected. Even the lower animals are often found with bronchocelic enlargements.

As to its comparative prevalence among the two sexes, the reports of the towns of Handigang and Deopatan may be conveniently employed.

Report of the Town of Handigang.

	Without Goître.	*With Goître.*	*Total counted.*	
Men,	325	29	364	Males to Females
Women,	340	31	371	32 : 33.
Boys,	169	3	172	Per centage on
Girls,	145	2	147	whole 6¼.
	979	65	1044	

Report of the Town of Deopatan.

Inhabitants.	*Without Goître.*	*With Goître.*	*Total counted.*	
Men,	474	34	508	Males to Females
Women,	411	38	449	39 : 44.
Boys,	218	5	223	Per centage $5\frac{3}{4}$
Girls,	269	6	275	
	1372	83	1455	

It thence results that in the town of Handigang, the proportion of bronchocelic women to men is 38 to 32, and in that of Deopatan 44 to 39, showing a slight preponderance in the number of bronchocelic females. It is to be farther observed, that in men the affection is often partial, and so inconsiderable as to escape general or cursory observation, yet that when inspected, it often turns out that individuals who say they have no *goitre* are found to present palpable though slight enlargement of the thyroid gland.

No period of life is exempt from its attacks; and both children and the lower animals may come into the world with goitre in Nipal. During the residence of Mr Bramley, a kid was born with a goitre as large as its head; and not only lambs are born bronchocelic, but puppies bred from English dogs become bronchocelic at a month old.

As to the rate at which it respectively affects children and adults, of 124 bronchocelic males, fifteen were boys under ten years of age, six of these were under six years of age. Of 140 bronchocelic females, fifteen were under ten years, and of these three were under four years. In these children the tumours were large enough to attract observation. The statement made by authors, that the age of adolescence is the most favourable period for the developement of bronchocele is in general terms confirmed by the observation of M. Bramley.

The author distinguishes the tumour, like the generality of writers, into three kinds. 1*st*, the cellular or cystiform, consisting of an aggregation of cysts; 2*d*, the vascular or pulsating; and 3*d*, the lymphatic or glandular.

On the subject of the *causes* of bronchocele, we find an inquiry into the influence of the water of the countries in which it is prevalent, the diet of the inhabitants, the mode of living, the atmospheric changes and meteorological vicissitudes.

From chemical examination of seven specimens of Nipal water by Mr Prinsep, it appears that these contain no ingredients, saline or earthy, in sufficient quantity to account for the origin of such a disease.

Mr Bramley then enters into a sufficiently detailed view of the usual diet of the different Nipalese, Himalayan, and Tibetan tribes, and arrives at the general conclusion, that there is no ground to attribute the prevalence of bronchocele to any particular species of diet.

From a similar review of the atmospheric and meteorological characters of the climate of Nipal and the Himalayan regions, it appears to be equally difficult to discover any connection between the prevalence of bronchocele and the nature of the climate. The climate of Nipal, indeed, as that of the sub-Himalayan districts, seems to be very similar to that of the mild or colder European countries, with this exception, that in the lower regions it is rather warm, while in the upper it may be absolutely cold, so that a few hours walk may often conduct the traveller from tropical heat to intense cold. The only district positively injurious to the functions of the animal frame, and unfavourable to human life, is that of Terriani, already mentioned as contiguous to the great forest called *Bhaber*; and here the soil and atmosphere are merely miasmatic, or what is now denominated malarial, that is to say, productive of ague and jungle fever, and all their accompaniments; and in those in whom it does not produce miasmatic fever, it betrays its deleterious influence, like that of the Sologne and the maritime Alps in France, or the Maremma in Italy, in stinting the growth of the body, or inducing a species of deranged action of the digestive organs, and the abdominal circulation, and a consequent hypotrophy of the whole frame. Here, indeed, bronchocele is extremely prevalent; but, while the disease is not in the same degree prevalent in districts which are equally miasmatic, it is very abundant in situations where no very decided proof of miasmatic air exists.

In short, while Mr Bramley admits that the etiology of bronchocele is involved in inexplicable difficulties, that no satisfactory theory has been yet proposed, and, above all, that its prevalence under every species and variety of climate shows that it is peculiar to none, he suggests the following general circumstances as concurrently likely to produce the disease.

In the *first* place, since the higher classes are less liable than the inferior, the inhabitants of the towns less generally attacked than those of the country, or, in other words, those who, in the pursuit of their daily duties, are less exposed to the weather than those who are most, are least liable to the disease,—he infers that a powerful exciting cause is the frequent or habitual exposure of the neck especially to the vicissitudes of the weather. The natives of the east always have the neck uncovered; and though this practice be not only not injurious, but requisite in the less elevated and warmer countries on the coasts of India, it may become capable of inducing glandular enlargement in the more elevated regions, where the atmospheric temperature is not only lower, but where, from the vicinity of mountain ridges, currents of cold air must be and are of frequent occurrence.

Secondly, notwithstanding this evidence of the general influence of the atmosphere in Nipal in inducing bronchocele, Mr Bramley infers that there is in the territory of Nipal and similar places something in the locality capable of exciting the disease into action. Thus foreigners who come thither to reside, as the Sepaihees (*vulgo* Sepoys) and servants of the Residency, may be, and are, occasionally attacked; and the most prompt method of arresting the progress of the disorder thus induced is to remove immediately from the locality.

In the *third* place, bronchocele, Mr Bramley reminds his readers, is always more prevalent in mountainous districts or their neighbourhood than elsewhere.

Though we give these arguments arranged according to the mode nearly in which they are given by the author, we must nevertheless express our doubt whether all of them be not referable to the same head of exposure of the neck in a climate liable to extreme vicissitudes, and violent currents of cold wind in persons otherwise accustomed to considerable external warmth. Even this view, however, is embarrassed with difficulties; and it does not enable us to understand why brute animals should become bronchocelic.

In conducting the treatment of this endemial malady, Mr Bramley proceeded much upon the principle of its being a local disorder, and little dependent on constitutional ailment.

With this view he began first by ordering the application of a bandage or neckcloth over the tumour, upon the twofold principle of protecting the gland from atmospheric vicissitudes, and the injurious impressions of the cold air, and applying pressure so as either to prevent further increase or excite absorption, and give a uniform support. The next measure was the employment of simple friction; and under the two means now specified several cases appear to have been cured. In the class of cases which resisted or seemed to resist the influence of these measures, the internal use and the local application of iodine were employed. For the former purpose the tincture was exhibited in the usual dose; and for the latter, the iodine ointment was diligently rubbed over the tumour.

The result of this mode of treatment was the following. Of 116 cases, the total number treated, including several of the Sepaihees, 57 were discharged cured so completely, as to leave no trace of the existence of the tumour. *Fourteen*, in whom the disease had nearly disappeared, absented themselves. *Thirty-four* derived considerable benefit from the use of the remedies, and would in all probability have been cured, or nearly cured, had they been regular in attendance, and persevered in the use of the measures. In *six* only partial relief was afforded after a trial of two months; and in *five* cases, chiefly middle-aged persons, in whom the disease was of long duration, perhaps with morbid change of structure, the tumours remained entirely unchanged.

The next article under this head is that by Mr Geddes *on Abscess of the Liver in European subjects at the Madras Presidency.*

The frequency of hepatic inflammation and suppuration in the Madras Presidency has been long known to medical observers who have visited or resided in that part of India; and to those who are aware of the insidious character of this disorder, it has been a matter of much anxiety and interest to possess unequivocal signs by which it might be possible to recognise the first traces of a disease so often terminating fatally, and to know some means by which this inauspicious result might be averted. Scarcely any author who has visited India has failed to attempt this task; and it is no injustice to say that success has not yet attended their efforts. Although the subject has been investigated with different degrees of attention by Dr John Clark, Mr Curtis, Dr William Hunter, Mr C. Griffith, Mr Matthews, Dr W. Saunders, Mr Marshall, Sir George Ballingall, Mr Annesley, and Mr Twining, yet we have still to complain of the insidious progress and latent character of hepatic suppuration, we still find occasionally a large abscess where we expected none, and where the patient was believed to labour under another disease, and find no disease of the liver where it was confidently believed to exist. It is chiefly with the laudable intention of ascertaining whether it be practicable to render the diagnosis of this disorder a little more precise and less obscure, that Mr Geddes has communicated the present paper.

The observations were made on a body of men consisting of 696 individuals, of whom 153 had been more than two years in India, and the other 543 were in general young men, who had joined the regiment chiefly in 1827.

In this body of men the monthly admissions into hospital from the 1st of July 1828 to the 1st of January 1830, during which period the corps were stationed on the sea-coast, averaged 121, in an average strength of 603. During this space of 18 months, 97 cases of hepatic disease are reported to have taken place. From the beginning of 1830 to the 1st of April 1832, a space of 15 months, the average admissions into hospital, from a mean strength of 592, were 123 in the month, and the number of hepatic diseases reported is 131. During the first period 50 deaths took place; and during the latter, including 19 caused by two visitations of epidemic cholera, 58 cases proved fatal, making a total mortality of 108. With few exceptions, in cases in which the symptoms gave no reason to expect palpable organic changes, all the bodies of the deceased were inspected. In 28 of these cases abscesses in the liver were discovered; and as there was no reason to doubt that the fatal termination was produced directly or indirectly by the disturbance excited in the constitution by this lesion, the proportion of mortality from this cause alone amounted to fully one-fourth, or, excluding the cases of cholera, to one-third of those from all other diseases. Of the 28 cases now referred to, 19 were under the immediate charge of Mr Geddes; and all, with the exception of *two*, were recorded in the hospital journals.

By these means the author has digested his materials in the form of two very valuable tables; and has given in his paper such details and explanations as could not conveniently be communicated otherwise.

By the first table it appears that, during the six months included between the 1st of July 1828, and the 1st January 1829, *seven* deaths from abscess of the liver took place; in the course of 1829, *nine* deaths; in 1830, four deaths; in 1831, six deaths; and in January 1832, two deaths occurred after the disease. It is further curious to observe that of these deaths 15 took place in natives of Ireland, and 13 in natives of England; and when we compare the general numbers of the deceased, and the number of the corps, it appears that the proportion is that one died of hepatic abscess in 22 Englishmen, and one of hepatic abscess in 24 Irishmen, while of 42 Scotchmen in whom six deaths took place during the period specified, none presented on inspection abscess of the liver.

The subjects of these affections Mr Geddes distinguishes, as to personal and physical characters, into the following orders. 1*st*, Young lads with light red, fair, or brown hair, having occasionally freckled faces, and with eyes either light blue or light gray, or, accompanying the darker hair, of a hazel colour; otherwise of appearance regarded as strumous. 2*d*, Individuals who have come out to India at a late period of life, and are perhaps under the influence of depressing passions. And 3*dly*, men who have been more than six years in India, and have most probably led there an irregular life. To the *first* class, of the 19 patients under the care of Mr Geddes, he refers 12; to the *second* 7; and to the *third* head he refers *two*. The remaining seven might, so far as age and residence in India were concerned, have been referred to the first head; but in other respects there is a want of facts.

The formation of hepatic abscess is so latent, and its progress so insidious, that Mr Geddes has, in common with all the authors who have studied this subject, felt the utmost difficulty in ascertaining the first traces of the lesion, and complains much of the obscurity of the symptoms at its early stage. So far as it is practicable to determine the former point from the facts given in the tables, the existence of the abscess is believed to have evinced itself in *one* case under the dysenteric form within 22 days after arrival in India; in *two* cases within six months, one being also dysenteric; in *four* within 12 months, and in the remaining twenty-one as follows:

In 7, within or at 18 months.
4, - 2 years.
3, - 3 years.
2, - 4 years.
3, - 5 years.
And in 2, at a longer space.

The indications of the existence of abscess have taken place principally in the wet season; and the numerical proportion with the leading symptoms are given in the following table.

Months in which the first indications of hepatic disease are recorded.	*Chief symptoms of the disease.*			
	Pain.	*Dysentery.*	*Fever.*	*Total.*
January, -	1	1	0	2
February, - -	0	0	0	0
March, -	0	1	0	1
April, - -	1	0	0	1
May, -	0	0	1	1
June, - -	2	3	1	6
July, -	2	2	1	5
August, - -	2	2	0	4
September, -	2	0	1	3
October, - -	1	1	0	2
November, -	1	0	1	2
December, - -	1	0	0	1
	13	10	5	28

From this table it results that in the wet months of June, July, August, and September, 18 cases have occurred; in the four months of the cold season commencing with October, *seven* cases appear to have proclaimed their existence; while in the hot season only *three* have been observed. All these deductions, it must still be observed, are liable to be rectified, from the inevitable difficulty of ascertaining exactly the very first date of the true origin of the disorder.

The course of the disease varied. The most rapid termination after the patient applied for assistance took place in eight days. In a second case, death took place in fourteen days, and in a third in twenty-four days after each had reported himself sick. This degree of rapidity, however, was rare. In the majority of cases the disease was protracted for a longer period. In eight cases it was prolonged, after the first distinct indications were given, for a period of from 40 to 118 days. In the other cases, the only documents on the duration of the disease are as follow. In *two* individuals death took place within six months after their arrival in India; in *four* after *one* year's residence; in *three* at or under a year and a-half; in *five* within *two* years; in *five* within or at three years; in *four* within *four* years; in *three* within or at *five* years; in *one* in 7, and in *one* in 12 years after arrival. *Twelve* deaths took place in the wet season; *thirteen* in the cold season; and *three* in the hot weather.

The most usual situation for the purulent collection was the upper part of the right lobe towards its posterior surface, and in this situation were 15 of 26 cases. In two of these the abscess had traversed the diaphragm and lungs, and part of its contents had been brought up by expectoration; and in another the matter had pointed outwards between the ribs, and been partly evacuated by opening there, sometime previous to the death of the patient. In 12 the abscess remained entire, bounded either by the substance of the liver, the ribs, or the diaphragm. In three cases the collection was found near the lower margin of the right lobe, which in two adhered to the colon. In *two* instances only was the left lobe the seat of abscess; in one the collection tended to the concave surface, and burst into the abdominal cavity; and in the other the abscess was in the upper convex portion of the lobe. In one case a large abscess occupied the centre of the right lobe, and a small one the left; and in the remaining *five* of the 26 cases the disease consisted of a number of small abscesses disseminated through the substance of both lobes.

The connection between hepatic abscess and dysentery has been long known. Though the observations made by Mr Geddes do not enable him to say whether the dysenteric affection was a cause or a consequence, his attention was directed to the fact, that in most of the cases dysenteric symptoms preceded or accompanied the formation of abscess of the liver. Thus in *eleven* cases the first indications of hepatic disease were dysenteric symptoms; in *four* cases the disease was regarded as dysentery; in *one* case it was regarded as chronic diarrhœa; and in *one* as chronic dysentery. In 10 cases, in which the bowels were either not irregular or disposed to constipation, or the evacuations, though fluid, were diarrhœal and void of blood, little or no disease except contraction of the colon was observed. In the remaining cases in which there were dysenteric symptoms, the colon was found to present all degrees of disease, from one or two superficial ulcers at its cœcal end to general ulceration with thickening of its tissues. Mr Geddes thinks that in all the instances, with one exception, in which the intestines were healthy, the abscess occupied the upper and outer part or the centre of the right lobe. But we do not perceive that the tabular view warrants any very positive conclusions on this head. It is, however, important to observe, that in the five cases, (4, 7, 17, 18, and 23,) which presented several small abscesses of the liver, severe dysenteric symptoms during life were associated with extensive ulceration of the colon. It is probably to cases of this and similar characters that the author alludes when he states that the large intestines appear peculiarly to sympathize with the state of the liver, and to give rise to disorder of the bowels, either occasional, violent, and recurrent, or habitual, and tending to the destruction of the patient. (P. 323, 325.)

It does not appear, after all the inquiry and research with which Mr Geddes has been able to consider this subject, that it is possible to dispel entirely the obscurity in which it has been so long involved. It is evident that he does not himself think that it is practicable to assign diagnostic symptoms sufficiently precise to enable the physician to detect, and, if possible, to control, the first symptoms of suppurative inflammation of the liver. Two questions, indeed, may be here stated by the pathological inquirer. *First*, Is this suppuration an effect of inflammation, or is it a species of suppurative destruction of the hepatic substance from the commencement? Is the stage of inflammation necessary in this case to the formation of matter; does it proceed uniformly to suppuration, or is this result only occasional, and dependent on the violence of the disease; and is it possible by antiphlogistic measures to prevent and obviate this consummation? *Secondly*, Is this disease not altogether independent of inflammation properly so named; and is it not a species of suppurative inflammation *ab initio*, without any preliminary stage of vascular irritation, congestion, or injection? It is quite clear that the absence of well-marked indications of any dynamic disorder or suffering in the region of the liver is a very strong proof in favour of the truth of the latter opinion. Or is it that the glandular structure of the liver possesses so small a degree of irritability and *coenaesthesis* or common sensibility, that it does not, when inflamed, give the nervous system the clear indications of the existence of disorder which other organs do? These observations we offer in the manner of conjectures, to be verified or rejected as more extended observation may authorize. In the meantime we may subjoin the following remarks by Mr Geddes, which, though they do not solve the difficulty, may deserve to be known.

"It will be perceived, I think, that in all, or nearly all these cases, there was evidence of some disorder of the liver having existed for some time previous to the appearance of any acute inflammation in this organ; and that in some instances, a collection of purulent matter was discovered there on dissection, when the symptoms of inflammation had either not been observed, or were not noticed until within a very short period of the dissolution of the patient. There appears to me, therefore, ground for supposing, that the liver, like the lungs, is subject to an insidious degree of inflammation, whereby pus becomes gradually formed within its structure; and that, as the collection of matter increases, the disease becomes developed under different aspects, as in the above cases, varying in each individual from constitutional peculiarity, the site of the abscess, or other circumstances, and differing in its symptoms and appearances from pulmonary phthisis by reason of the difference of structure. and the viscera contiguous to each organ; climate also, as inducing idiopathic affections, similar to those resulting from an abscess in the liver, may also have some effect in producing some peculiar symptoms of this disease. There appears also reason to think, that this insidious disease is of a scrofulous nature. Those who have fallen victims to it, as has been above-mentioned, have, for the most part, had a scrofulous appearance; the first indications of the disorder have been most generally manifested in the wet or cold season, while they appear to have been benefited by the hot weather: and I have reason to think, that there is a greater tendency to this affection when the soldier is labouring under the weakening effect of depressing passions, and change of life, incidental to arrival in this country late in life; and more liable to affect Europeans soon after landing at a further period of their sojourn in India."—Pp. 333, 334.

In a paper on the use of *Aqua Ammoniæ*, or, as it is here termed, *Liquor Ammoniæ Puræ*, in Cholera, Mr A. Steart recommends in the treatment of the most intense and virulent form of this disease, the exhibition of thirty drops of the alkali in three drachms and a-half of distilled water or a little brandy, to be repeated every five, ten, or fifteen minutes, according to its effects and the state of the patient. After reaction commences the quantity is to be diminished; heat is at the same time to be applied in every mode; and blood must be procured from the veins if possible.

The first symptoms of amelioration are, as in other cases, the cessation of vomiting and purging. Next morning it is proper to give rhubarb and magnesia in small quantity, or any mild purgative to procure a few motions. This method of treatment Mr Steart represents to be infinitely more successful than that by large doses of calomel and opium, stimulants, blisters of scalding water, &c.

The following table exhibits the result obtained by treating 124 cases of cholera according to this method,—118 from 8th of August to the 7th October 1830, and 6 cases in July 1831.

108 suddenly affected without previous illness.

9 affected with giddiness or uneasiness for some hours previous to vomiting.
1 died in an hour and a-half.

118
6 in July 1831; four suddenly; two not.

124

"Of the whole number, eight were not bled, in consequence of their friends objecting; these recovered more slowly than the other cases The average quantity of blood taken was about seven ounces.

"Twenty-nine persons in the village, who did not come under my treatment, died in less than twelve hours after being attacked; and from all inquiries made, it appears that during the season of 1830, every person who was attacked with cholera, and trusted to native remedies, died. Some of the above patients died so suddenly as to prevent assistance being rendered them. Of the fatal case which came under my treatment, I beg to remark, that the man had been ill nearly two hours before I saw him. He had repeated doses of medicine administered, but none would remain on his stomach, and he died in about an hour and a-half. The symptoms otherwise were exactly the same as those of other patients. In this instance the *liquor ammoniæ* made by myself being exhausted, I was obliged to use some which I found was both weak and impure. The body was not examined from religious prejudices."—Pp. 381, 382.

These statements have created in us a slight feeling of amazement, and roused somewhat our habitual incredulity. We shall say nothing on the subject, however, save that the remedy deserves a fair trial; and that Mr Steart is a fortunate person in believing that he can cure such a disease as virulent cholera, and still more so in discovering that he can do so by means so simple.

Dr C. Morehead makes some *Observations on Dracunculus or Guinea Worm,* illustrating the geological and physical characters of the localities in which it is most prevalent.

Dr Morehead declines entering on the question of the *ova* of this parasitical animal entering the pores of the skin, passing from the stomach into the circulation;—as "investigations which in the present state of knowledge are surely beyond our intelligence."

He studies, on the other hand, from an extensive survey of the localities in which the disease is prevalent, to show that *Dracunculus* chiefly prevails in districts, the rocks of which are of the secondary trap series, *i. e.* "rocks reported by geologists to be of igneous origin."

This, however, is not all; as it does not explain the remarkable increase of the disease during certain seasons. The Fourth Light Dragoons arrived on the 14th of February 1827, at Kirkee, rather a dracuncular district; and though during the first year no cases ensued, the disease began to manifest itself at various rates every subsequent season. In 1828, *eight* cases took place; in 1829, *six* cases; in 1830, *eighteen* cases; and in 1831, only *four* cases,—the principal prevalence being in the months of March, April, May, June, and July, while the other months were comparatively or totally exempt. At length in 1832, a very frightful irruption of the disease betrayed itself, both in the earliness of its appearance, and in the unprecedented numbers in which it affected the soldiers of the regiment. In February *one* case appeared; in March 5; in April 7; in May the numbers rose at once to 57; in June to 64; in July they fell to 48; in August to 26; in September there were only 3; and the disease was then extinct, after having affected 133 individuals, 72 twice, and 6 in three instances.

On the cause of this remarkable prevalence during one season we cannot perceive that Dr Morehead has adduced any satisfactory information.

Dr Morehead does not rigorously adhere to his promise given at the beginning of the paper,—not to treat of the medical history of the disease; for he gives some good observations on the effects which it produces and the mode of extraction. On the latter subject the following notice deserves attention.

> "I shall conclude with some remarks regarding the mode of extraction which was extensively adopted by Mr Wilkins. It was the practice of that gentleman when he found the worm like a cord under the skin, and previous to any other indication of the disease, to select a favourable situation and cut with a lancet parallel to the worm, and on exposing it, to pass a thread underneath by means of an eye-probe. Where the part was fleshy, and also in many cases about the ankle, the extraction was speedily effected, sometimes in less than an hour, and the patient was cured. In others, however, the plan was not successful, the worm remaining fixed, or breaking, and giving rise to inflammation and suppuration."—P. 433.

Every one remembers the interesting description of the method of extracting the Guinea worm given by Bruce. It appears that the method of Mr Wilson, though upon the same principle, is less tedious, but liable to the same risks which Bruce tells us the Egyptians deprecated and studied to avoid.

Here, however, our remembrancer reminds us we must pause for the present, and postpone our further examination of the present volume to a future season. In doing so, we feel assured that we only re-echo the sentiments of the profession in this country, when we say that the present volume well sustains the character of its predecessors, and that the Medical and Physical Society of Calcutta have conferred a great favour on the medical world, and have earned their best thanks by the concentration and preservation of so much instructive matter. That they may continue in the manner in which they have hitherto proceeded is at once our wish and our hope.

Some more attention to the typographical accuracy of the volume would be well bestowed. The paper of Mr Bramley presents not a few errors of this kind.

ART. II.—*Traité Theorique et Pratique des Blessures par Armes de Guerre, redigé d'apres les Leçons de M. Le Baron Dupuytren, &c. A Theoretical and Practical Treatise on Injuries by weapons of war*. Edited from the Clinical Lectures of the BARON DUPUYTREN, Chief Surgeon of the Hotel-Dieu, and published under his directions, by Drs PAILLARD and MARX. 2 Vols. 8vo. Paris 1834. Pp. xliv. and 1053.

THE struggles of July 1830 furnished M. Dupuytren with the means of delivering a course of clinical lectures on the injuries inflicted by different kinds of weapons, which MM. Paillard and Marx have collected and illustrated by references to other works on military surgery. In what manner the task has been executed, we shall declare hereafter, and in the meantime, beg to direct the attention of our readers to some of the more important parts of the treatise.

The work consists of a preface and twenty-three chapters, containing remarks on the different kind of weapons employed in warfare, and the injuries inflicted by each; the appropriate treatment; the various complications of wounds; and the effects of gunshot and other wounds in various regions of the body.

In the preface we are presented with a fragment of the Baron's introductory lecture, setting forth the opportunities which he had enjoyed of acquiring the information necessary for the course which he was about to deliver. From this it appears that at the commencement of his studies, his attention had been directed to the accidents of warfare, for, about the celebrated 13th of Vendemiaire (10th October 1795,) he was a pupil at La Charité, where the numerous victims of the political fanaticism of that period received the necessary treatment. On this occasion, however, though he met with many cases both curious and instructive, which made an impression on his mind, all recollection of the routine events soon vanished, and it was to the contests of 1814, 1815, and 1830, that he owed that experience which gives value to his lectures.

The murderous contests at the commencement of 1814 had filled the hospitals of Paris with the wounded, when on the 30th March the inhabitants were roused by the report of cannon in the neighbourhood. Dupuytren, with Cruveilhier, Breschet, Lebreton, Hussinet, Marx, Devienne, &c. determined on proceeding to the scene of action to give the wounded the benefit of their services, and as soon as the visit to the Hotel-Dieu, which took place at 5 A. M. was concluded, set out with all the necessaries to Vilette, a village situated between the height of Montmartre and Chaumont. There they took up their station in a deserted house, and from eight in the morning till half-past five in the afternoon, within reach of the enemy's fire, dressed and operated on upwards of twelve hundred wounded, who were afterwards removed to Paris. At five o'clock the approach of the hostile forces made them decide on retreating, but, moved by the prayers of the wounded around them, they were induced to prolong their stay till a cannon ball carried off both the legs of an officer, who was standing at the door of the house. They then retreated, and after rendering professional assistance to a depôt of wounded with which they met, reached the Hotel-Dieu, whither those most severely wounded had previously been sent. There for several nights and days they continued unremittingly their professional services. Six months were spent in the after treatment of the sufferers, and during that period the reports of more than five hundred important cases were collected, with the most remarkable of which the Baron's lectures are illustrated.

The combats of 1815 may be considered as the continuation of those of 1814, and but few, except those wounded at the battles of Ligny and Waterloo, found their way to the hospitals of Paris. General Excelmans' skirmish, however, at Roquancour, near Versailles, with the Prussian regiments, and some unimportant contests in the neighbourhood of the capital, furnished M. Dupuytren with several interesting cases.

After fifteen years of dear bought peace, the catastrophe of July 1830 occurred. The events of that period are described by the Baron with a glow of language which is seldom met with in the pages of medical literature, and to which we could not do justice in a translation, far less in an abridgement.

The most deadly and frequent combats took place on the right bank of the Seine, in the Rue St Antoine, at the Hotel de Ville, the Place du Châtetel, the Louvre, Palais Royal, the Rue St Honoré, the Rue Richelieu, and at the Tuilleries. On the left bank some skirmishes occurred which were much less deadly; a circumstance which accounts for the small number received by the hospitals in that quarter. But the Hotel-Dieu, being situated between the two branches of the Seine, and in the midst of the most severe contests, received the wounded from both sides of the river. This hospital in general contains from 900 to 950 patients, and on the evening of the 26th of July 1830 the number was 901. On the 27th, 362 patients were dismissed to other hospitals or their own homes, and replaced by 382 wounded. No crowding took place, for the wards could have contained with ease a thousand. On the 28th, the sufferers whose injuries were slight were dressed and sent home; those whose wounds were of a more severe nature were placed in the wards.

On the morning of the 28th, litters with bearers were provided for the purpose of conveying the wounded to the hospital, in which service eight or ten were always employed. The ward on the ground floor was set apart for the reception of the wounded, there the injuries which they had received were examined, the first assistance rendered, and the urgent operations performed.

Those slightly hurt were dressed and sent home, while those who were more severely injured were carried to the wards. The citizens and soldiers were confounded together, in the hope that their proximity might promote peace, and that those who entered enemies might depart reconciled. This plan was successful, and not a quarrel took place, not even an unkind word was uttered. The ordinary surgeons of the hospitals, with several young practitioners and students of medicine, contributed their assistance; and none of the sufferers were left for a single moment without the necessary comforts and attentions.

On the evacuation of Paris by the Royalist forces the accidents did not cease. Among the manifestations of joy exhibited on that occasion, the firing of guns was not omitted; and a considerable number of wounds, occasioned by the bursting of guns, was the consequence. The noise made on this occasion did much injury to the patients in the hospital, by preventing sleep and producing fever and tetanus. In eight days all was quiet.

The Baron's experience was completed by the establishment of a house of convalescence at St Cloud for the reception of the wounded, which was committed to his care. The success of this new plan, first conceived by M. Odillon-Barrot, was beyond calculation. The most astonishing cures were performed, and M. Dupuytren, who had been reproached with hesitating too much to amputate, was often inclined to accuse himself of having performed the operation too often, when he saw patients as severely wounded as those upon whom he had operated recover without the loss of their members. In the visits which he paid daily for three months to this house of convalescence he had an opportunity of observing the progress of the cure, the accidents which occurred, and the pains, incapabilities, and infirmities which were the result. A register of the injuries was kept with the greatest accuracy, which at once served the cause of science, and enabled the government to decide upon the claims made on its justice.

Into the house of convalescence at St Cloud 425 patients were received, and of these only two died in the establishment. The nature of the wounds for which they had been treated in the different hospitals of Paris was as follows: gunshot 354, bayonet 24, contusions 33, doubtful cases 14.

In fine, M. Dupuytren with several of his colleagues from the principal hospitals of Paris was commissioned to visit those wounded during the days of July, for the purpose of ascertaining the severity of their wounds, and their claims to national recompense. Thus every thing which he had not seen in the hospitals, in private practice, or at the house of convalescence at St Cloud, was presented before him, so that there was not one of the wounds received during the memorable days which he did not frequently and attentively examine.

Such are the claims to experience which M. Dupuytren puts forth, and we are bound to admit that he has turned them to good account.

The remainder of the preface will not detain us, as the literature of this part of surgery has been amply discussed in the 40th volume of this Journal, page 438. We cannot help remarking, however, that the editors exhibit an unnecessary affectation of learning, when they trace surgery from Noah, or at least from Æsculapius, whom they discover to have been his eighth descendant, and when they inform us, that Hannibal's staff-physician treated wounds. Had they given us a fair sketch of the different writers on military surgery, and pointed out the most important facts connected with each, though rather a work of supererogation, it might have been tolerated; but we must protest against the parade of second-hand learning here made, which we are sorry to say French Medical writers, in their attempts to imitate the Germans, are content to substitute for sound erudition.

The first chapter is devoted to a description of the various weapons used in warfare. Man appears in all ages to have employed himself with various degrees of ingenuity and success in contriving means for the destruction of his species, and the number of weapons invented is almost incalculable. The work of Carré, voluminous as it is, has not exhausted the subject, but it will be sufficient for the surgeon to be acquainted with those used at the present day. All the writers who have endeavoured to classify weapons have found it difficult to execute their task in a satisfactory manner. Rejecting, therefore, their division into *hand arms* and *missiles*, *mechanical*, *neurobalistic*, *katabalistic*, *offensive* and *defensive*, *moveable* and *portable*, M. Dupuytren arranges them according to the injuries which they inflict. The only objection to this arrangement is, that many weapons produce various effects; but this may be easily obviated by introducing such modifications as the nature of the subject may require. Following out this plan M. Dupuytren discusses successively weapons which stab, cut, stab and cut, rend, tear, contuse, crush; air and steam-guns, portable fire-arms, cannon; gunpowder, projectiles, mines, and other means of destruction, having powder for their principle of action. This corresponds sufficiently to the surgical division of wounds into punctured, incised, punctured and incised, &c.

Stabbing, pricking, or puncturing weapons are those which present a point mounted on a blunt shaft, more or less slender, and which act rather by pushing the tissues aside than by dividing them. Such are daggers, plain arrows, stakes, awls, foils deprived of their buttons, and nails, with which the Cossacks sometimes arm a long pole, and which they call a lance, pitchforks, spits, &c. To these may be added compasses, *chevaux de frise*, *chausses trappes*, or caltrops and iron harrows. The materials of which these weapons are constructed vary much; but their forms may all be compared to a cone, more or less elongated, straight or slightly crooked, smooth or rough, flattened on one or more sides, terminating at one extremity in a sharp point, and at the other in a base, to which is usually fitted a handle, varying in length and shape. Most of them receive their impulse from the hand, either unaided or assisted by some instrument as the bow. They act only by their point. The more slender they are the more easily they penetrate, and the less force do they require. On the contrary, the greater their volume, or rather the greater the disproportion between the point and the body, that is, the more rapidly they increase in thickness from the point to the body, the more difficult it is to cause them to enter. Their elongated form fits them for penetrating to great depths by gliding among the organs without scratching or dividing, as cutting instruments are apt to do, and this without producing hemorrhages, effusions, &c. As the wounds, however, are long and narrow, and the tissues which they have removed when they return upon themselves close the opening of the wounds, they are particularly apt to produce pains, spasms, convulsions, inflammations, and contractions.

Wounds produced in this manner vary in size and depth, from that caused by the sting of an insect to that inflicted by the horns of a bull. But, whatever be the depth and form of the wound, or the accidents with which it may be complicated, all the instruments act in a common manner, and produce similar effects. This may be illustrated as regards the soft parts by considering what occurs in acupuncture. The instrument used in this operation penetrates, disperses, displaces, and distends the fibres of the tissues, takes their place, and by the assistance either of slight percussion, or a rotatory motion communicated to it, reaches to a greater or less depth through the soft parts of every kind, without causing much pain, and above all without producing solution of continuity. When the instrument is cautiously withdrawn, the parts return to their natural state, and resume the situation which they before occupied, so that the openings made into the canals and cavities close up, as it is withdrawn, and hence there is commonly no hemorrhage either internally or externally. In the case of puncturing weapons, as in that of the instrument used in acupuncture, there is slight pain, penetration, displacement, distension, and in fine, return of the parts to their natural situation on withdrawing the instrument. But to this elementary mode of action must be added the effects attributable to the length, thickness, and form of the instrument, the state of its surface, and the substances with which it may be charged. An instrument of no great length which traverses only a small number of layers of analogous tissues, will produce fewer accidents than another much longer which traverses a greater number of different tissues. A very fine instrument nearly of the same size throughout all its length, such as a needle used in acupuncture, will experience little resistance, and produce little pain in traversing the parts. On the contrary, another instrument, the size of which is greater, and the form of which approaches more to that of a cone, increasing more rapidly in thickness from the point to the base, will be more difficult to insert, cause greater pain, and be more frequently attended with accidents. It is probably this difficulty which puncturing instruments of a conical form experience in penetrating the tissue, that has given rise to the addition of cutting edges to weapons used chiefly in stabbing.

The volume of the piercing instrument influences in another way its effects. The action of the most delicate is confined to turning aside the tissues, while the more voluminous, as the sharpened stake, pick-axe, &c. almost always produce concussions, distensions, contusions, ruptures, &c. and hence to their effects as puncturing weapons, ought to be added those of contunding instruments.

Puncturing instruments of a rounded form appear to produce wounds of the same shape, and the cicatrices ought to exhibit the appearance of an elevated or depressed point. This, however, is not always the case, for M. Dupuytren has seen cases in which bodkins have produced wounds and cicatrices similar to those which a flat dagger with two cutting edges would have inflicted, and which can scarcely be explained except by the direction of the fibres of the skin, or the direction in which they were stretched at the moment of the injury. This assertion is supported by the following case and experiments.

Charles Levaufre, 36 years of age, of a good constitution, and sanguine temperament, resolved on putting himself to death; and to execute his purpose chose a thick bodkin, with which he inflicted three blows on himself, in the region of the heart on 20th August 1831. Immediately after the accident, he was conveyed to the Hotel-Dieu, and the following appearances were observed. Opposite the seventh rib three small wounds were discovered, two lines in length, with the edges in juxtaposition, and forming with each other acute angles. They were parallel to the rib, and placed at the extremities of a sort of triangle, each side of which measured eight lines. They resembled the wounds which might have been inflicted with a penknife or any other flattened instrument with cutting edges. The instrument, however, was procured, and experiments having been made with it on the dead body, the same appearances were observed. The wounds inflicted on himself by the patient did not penetrate the cavity of the thorax, and after the necessary treatment he left the hospital cured.

Under the direction of M. Dupuytren the experiments were again repeated with the following results. 1*st*, The small wounds were always elongated, the edges equal, close to each other, and formed very acute angles. 2*d*. The length of the wound was always in proportion to its depth. 3*d*, If in some points of the surface of the body, the lips of the wound remained separate, they could easily be closed by stretching the skin. 4*th*, This exact approximation could take place only in one direction. The skin was well stretched in an opposite direction, but the angles were never acute, always obtuse. It was easy to see that the action of the bodkin was limited to separating the fibres of the skin. Does this fact throw any light on the structure of the cutaneous tissue? 5*th*, In a given region of the body the puncture always assumed the same direction. On the neck and anterior part of the axilla, they were always perpendicular, on the thorax parallel to the ribs and intercostal spaces. On the anterior region of the abdomen above and below they were oblique, and seemed to follow the direction of the muscular fibres; at the middle they were perpendicular; in the extremities they were parallel to their axes. The importance of these facts in medical jurisprudence need hardly be pointed out.

Smooth and polished instruments pass through parts more easily and with less pain and danger than those of which the surface is ill polished, unequal or rusty. Some warlike instruments more frequently used in ancient than in modern times, such as the barbed arrows and dart, present on their surface asperities, points, and inequalities, which render them more dangerous in their action.

To the physical effects of piercing weapons are to be added those of acrid or poisonous substances with which they may be charged; but in such cases the consequences are different, and the wounds are merely the means of inserting the poisonous matter, to which alone the accidents which supervene ought to be attributed. Be this as it may, it cannot be too much insisted on that all punctured wounds, whatever be their length, size, form, or state of their surface, retain enough of their primitive character to enable us always to recognize a tendency of the separated tissues to return to their natural situation, and most frequently prevent the effusion of fluids.

In fine, the states of these wounds vary. The substances which inflicted them are either altogether withdrawn, or remain in whole or in part in the midst of the tissues, or introduce and deposit poisonous substances. Those of the first class, in which no important vessel or organ is injured, and which are not complicated with any nervous or inflammatory accident, heal of their own accord, and require merely the employment of infusions and decoctions of emollient plants, discutients of a sedative nature, as the solution of the acetate of lead, or refrigerants, such as cold or iced-water, according to the circumstances of the case. The more their surfaces are in contact the more readily does union by the first intention take place.

Though punctured wounds rarely give rise to external hemorrhage, they frequently produce ecchymoses, infiltrations, effusions of blood, and sometimes, though rarely, diffuse, circumscribed, and varicose aneurisms, complications of which the Baron treats in another part of his course.

Piercing weapons in their passage through different parts of the body may encounter aponeuroses, tendons, ligaments, cartilages, and bones; may wound vessels, nerves, and canals of every kind; and may penetrate into hollow organs and into cavities lined with serous, synovial, or mucous membranes. In such cases the wounds cease to be simple, and the injuries which they inflict give rise to serious accidents.

The ancients confounded under the title of nervous parts the white and glistening tissues, whatever were their functions and structures, and in consequence of this confusion attributed to the lesion of tendons and aponeuroses, what frequently depended on injury of the nerves. Modern anatomy, though it has made known the structure of, and differences between, these tissues, and taught us to refer to each the accidents of which it is the seat and cause, has frequently, in M. Dupuytren's opinion, caused us to shut our eyes to the part which fibrous organs play on punctured wounds. These tissues have a kind of sensibility *(une maniere de sentir)* peculiar to themselves, and are not affected by those excitants which rouse other parts,—a fact which is clearly shown by the pains experienced from the distension or twisting of fibrous and ligamentous parts. Thus pricks, which produce no pain in these tissues at the moment when they are received, occasion great agony at the end of some days, of which M. Dupuytren has met with several instances in the course of his experiments. The accidents in bleeding attributed to pricking of the tendon of the biceps are not, he conceives, altogether imaginary, for phenomena are observed after bleeding at this point which can be attributed only to lesion of this part.

These accidents commonly occur only on the fourth or fifth day after the wound has been received. They commence with deep pains, accompanied by swelling of the injured portion of the tendon or aponeurosis. To this soon succeeds contraction of the limb in the direction of the wound, and incapability of stretching it in an opposite direction without great pain. Sometimes nervous affections, spasms, and contractions, with local and general fever supervene. These symptoms continue for weeks and even for whole months, after which the swelling and pain gradually diminish, mobility is recovered, the skin detaches itself from the fibrous parts, and the tissues recover their usual state. The issue, however, is not always so favourable. Chronic abscesses frequently form round the tendons and aponeurotic parts which have been injured and after these have been opened by nature or art, fistulous openings remain which cannot be healed, till more or less of the tendons and aponeurotic coverings have sloughed. In such cases the adhesions which take place between the fibrous tissues and the neighbouring parts are close, and consequently more difficult to destroy. Sometimes they remain during life, and this adherent cicatrix is observed to be displaced in all the motions impressed by the action of the muscles on the tendons, as in all other adhering cicatrices, to whatever cause they may be owing. Bleeding, local and general, emollient cataplasms, emollient antispasmodic drinks, with low diet ought to be employed at first, to dissipate the inflammation, and afterwards recourse ought to be had to the water or vapour *douche*, embrocations, &c. to diminish the adhesions.

Piercing weapons may encounter in their passage cartilaginous or osseous parts, by which they are arrested, and against which they are often broken when weak and brittle. Such wounds produce *perichondritis* or *periostitis*—affections too well known to require to be discussed here.

We shall not detain the reader with M. Dupuytren's views of punctured wounds of hollow organs, and serous, mucous, and synovial cavities, nor with his remarks on the presence of foreign bodies in the wound, and the complications produced by the introduction of poisonous matter, nervous affections, or different kinds of inflammation, as he will find all these subjects discussed more satisfactorily in various works in the English language. To one remark of M. Dupuytren, however, we beg to direct attention, as it is no less novel than erroneous. In speaking of the different means of introducing narcotics into the system, and claiming for himself the merit of recommending their introduction by the rectum in cases of *trismus*, he asserts, that that portion of the intestines not having the power of altering by digestion the substances placed in it, the action of medicines administered *per anum*, will be more speedy and powerful, and their dose ought therefore to be only one-half. Now this assertion is contrary to both reason and experience. The change which a medicine undergoes in the stomach is such as to render it more powerful, by freeing the active principle from the substances combined with it, which have a tendency to lessen its effect by acting as it were as a sheath to it. But this does not occur in the rectum, and hence from reasoning we are warranted in increasing the quantity of any medicine exhibited as an enema or suppository. Experience teaches the same, for in practice we find that a three times greater quantity is required when so administered, than if it had been swallowed.

Did our limits permit we would lay before the reader M. Dupuytren's account of the different species of weapons, and the specific characters of each. As this, however, is not the case, we must be content with briefly noticing some of the most important parts.

The comparative examination of the physical action of projectiles discharged by fire-arms, or inanimate substances, with those on the human body, has been hitherto too much neglected. It is, however, a subject of importance; because a knowledge of the effects observed on inert substances will enable us to account for numerous complicated phenomena which are met with in wounds inflicted by means of such instruments.

Balls discharged by portable fire-arms are usually of lead, and as they may happen to strike against bodies of different densities, the effects will vary both as regards the substance struck, and the projectiles themselves; hence the necessity of examining separately these different actions.

The effects of balls directed against a body covered with plaster vary according to their direction. If that be perpendicular to the surface of the body, they will penetrate to a greater or less depth, forming a canal of a conical shape, of which the summit is round, of the same size of the ball, and situated at the opening, the ball being at the termination. It has been said that in this last situation a species of dilatation exists, in which the ball may be freely received, and this phenomenon has been attributed to the rotatory motion of the ball on its axis, or to its flattening, and consequent increase of breadth. According to M. Dupuytren, however, it is rather connected with an abatement of its speed, and the increased concussion of the parts which it successively traverses. If the direction be oblique, the balls form canals more or less long, broad, and deep, analogous to those produced in the human body, notwithstanding the difference of structure.

Projectiles differ in their effects on dressed wood and growing trees. Of the former it is of less consequence to speak, but the latter are important, as throwing light on the effects of similar substances on the bodies of animals.

The effects of projectiles on living ligneous substances are of two kinds; the physical, immediate, or primitive, and the vital, mediate, or consecutive.

The immediate effects are perforation to a greater or less depth without detaching or shattering any portion. When this takes place perpendicularly to the surface, the interior of the canal formed by the projected body is unequal, and as it were villous, owing to the unequal resistance offered by the fibres. When the tree is completely perforated, loss of substance and splinters are met with. The opening too made by the ball at its exit is larger than that made at its entrance. When it has been struck obliquely a canal more or less deep and long is found, the surface of which is more or less unequal and marked by splinters.

The consecutive effects are not less remarkable. These consist of a flow of morbid fluids, mortification of the tissues placed in the course of the ball, their immediate separation and the formation, according to circumstances, of a *sequestrum;* sometimes death of the tree beyond the injured part, the formation of a reparative tissue destined to close up the wound; or the formation and continuance of fistulæ, and a sort of suppuration till the foreign bodies have been expelled, absorbed, or acquired the right of habitation, (*droit de domicile.*)

When a body formed of two layers feebly united is traversed by a ball with great force it often happens that the one is not separated from the other, whereas, were the force less, the posterior would be detached from the anterior to a greater or less extent. The openings and canals produced by balls are narrow in proportion to their force, and gradually become wider as the impulse is lost. That this conclusion is correct will appear on reflecting that a ball at full speed pierces without shock, rent, or splinter the bodies in its way, while, as its force and rapidity diminish, it makes for itself a passage larger and larger till it stops in the midst of the body which it has penetrated, and produces around it alterations which still farther enlarge its place of rest.

The difference in size between the entrance and exit of the ball is owing to the resistance or non-resistance of the parts traversed by it. When a part through which a ball passes consists of several layers, each of these is enabled to offer some resistance by the support which it receives from the one behind it, but when, as happens at last, this support is suddenly withdrawn, the tissues are forced before it rather than pierced. Hence, while the entrance is round and its edges smoothly cut, the exit is irregular, torn, splintered, and prolonged in the form of a cone.

M. Dupuytren applies these facts and conclusions to the explanation of the various phenomena connected with the physical effects of gunshot wounds on the body, and illustrates his positions by several cases. He also enters at considerable length into the effect of different substances in flattening, pulverising, or causing balls which may be directed against them to rebound. Many of the facts have been previously observed, but M. Dupuytren's merit consists in arranging and corroborating them by his experience, and in his application of them to the explanation of phenomena.

We must confine the remainder of this article to a brief notice of the Baron's views regarding purulent deposits consequent upon wounds and compression, concussion, and contusion of the brain.

Besides the purulent deposits found in the neighbourhood of wounds, others are frequently met with in various parts of the body after accidents and operations. By some their existence has been denied without any good ground, as the testimonies of the most eminent surgeons of the seventeenth, eighteenth, and present centuries have placed the matter beyond doubt or cavil. In what manner and by what causes they are produced has not been very satisfactorily shown. It is certain that in many cases organic lesions have preceded, and as it were prepared the way for them; because when death has occurred from operations rendered necessary by cancerous or scrofulous affections, on inspection cancerous, and more frequently scrofulous tubercles have been found actually in a state of suppuration. But these affections are not to be confounded with the purulent deposits and infiltrations which we are now discussing.

Chronic inflammation preceding extensive wounds and capital operations, the existence of which is shown by pain in certain points, a slight slow fever, difficult and impeded action of the parts in which it is situated, and above all by traces of old organic lesions, very frequently produces great internal suppuration after extensive wounds and capital operations. It would appear that in these cases inflammation, which up to that time had remained chronic and latent, passes at once to the acute state. Pains, especially rheumatic, excited or recalled by some imprudence on the part of the patient, or variations of temperature, become likewise the causes of these affections, and M. Dupuytren affirms that, laying aside any material organic predisposition, sudden cooling, the swallowing of cold substances, the imprudent exposure of the body in a state of perspiration to a current of cold air, violent emotions, &c. are sufficient to produce these terrible complications of wounds. Indigestion, to which they have sometimes been attributed, is often but an effect or symptom of them. To the causes already mentioned M. Dupuytren adds, the sudden suppression of old and abundant external suppurations, in consequence of amputation being performed on account of scrofulous caries, comminuted fractures, &c. producing a considerable secretion of purulent fluid. The rapid change in the circulation occasioned by the abstraction of a member, which causes the blood to fall back upon the rest of the body, is also another cause of those internal disorders to which the plethoric or sanguine constitution of certain individuals predisposes them.

To determine the causes of such affections is something more than a matter of mere curiosity, as a knowledge of them may teach us the readiest way of preventing their accession. M. Dupuytren does not deny that in some cases purulent matter may be absorbed from the surface of wounds by lymphatic vessels and veins, circulated along with the fluids contained in these vessels, and afterwards deposited almost without previous inflammation, on the different surfaces, and in the parenchyma of organs. Upwards of twenty years ago, he met with a case of absorption of matter by the lymphatics in an individual who died after an attack of phlegmonous erysipelas, terminating in suppuration. The lymphatics were filled with matter, from the seat of the disease to the neighbouring glands which they entered. The same may take place in the veins, especially when they happen to be divided, and their orifices remain open on the surface of wounds, in a state of suppuration. Nothing is more common than after extensive wounds or great operations, to see in the veins purulent matter, or clots of a gray colour, or apparently purulent on their surface, as well as on their interior. This, however, is not always the result of suppuration, being more frequently produced by inflammation of the internal membrane of the veins, usually denominated *phlebitis.*

If the theory of absorption be true, the resources of art are of little or no avail. We cannot say what produces or what prevents absorption, and the medical man is but a powerless observer of the deplorable effects of a disease, which he can neither prevent, cure, nor alleviate.

Nothing can be more obscure and insidious than the symptoms of inflammation and suppuration after wounds and operations; and with all the attention that can be paid to the case, the patient may die before the nature of his complaint can be determined. According to M. Dupuytren's observations, the abscesses of which we are speaking are preceded by traumatic fever of a more violent nature than would be expected from the size of the wound. This fever is continued and attended by paroxysms which are preceded by rigors. These supervene from about the fifth till the tenth day, and are perhaps more symptomatic of the deposition of purulent matter in the affected organs than of inflammation. Be this as it may, the rigors are always present, return for several days successively once or twice, and in some cases affect a regularity which might be mistaken for intermittent, or at least remittent fever.

Indigestion very often marks the commencement of the disease, and in general from the beginning, the wound becomes pale, sinks down, and the matter is diminished in quantity, and deteriorated in quality. The patient does not complain of any local pain, and appears to suffer only from the fever and general agitation. With whatever attention the various organs and their functions may be examined, neither pain nor any other symptoms which might lead us to the seat of disease can be distinguished. The fever, however, continues, the suppuration on the surface of the wound stops, the skin assumes a jaundiced tint, the tongue becomes dry and black, an obscure delirium supervenes, the chest is affected, and then for the first time symptoms of effusion may sometimes be observed. The patient dies; and inspection of the body discloses derangements which were far from being suspected during life.

M. Dupuytren points out the various modifications of the disease as it occurs in the several viscera, and shows that collections of matter may occur in numerous other places, into a detail of which it is unnecessary here to enter.

According to the views of the older writers, which derive support from experiments on venous absorption, visceral abscesses are produced by true absorption of the purulent matter of wounds, while, according to others, such as Dance, Blandin, and Cruveilhier, they are caused by the matter produced by inflammation of the inner membrane of the veins in phlebitis being mixed with the blood, and in the course of the circulation deposited in the various organs. Those who maintain the former opinion support it by referring to the veins being cut, to their remaining open on the surface of wounds, to their absorbing power, to the purulent matter found within the veins, and to the grayish colour of the blood in the veins, in the neighbourhood of wounds. Those who suppose *phlebitis* to be the cause, ground their opinion on the presence of purulent matter in inflamed veins, on that of purulent clots met with in veins in the vicinity of wounds, and especially in those of the uterus in puerperal *peritonitis*, on the extent of this inflammation, and the height to which it spreads along the venous system. Bordeu would have attributed the transference of purulent matter from suppurating surfaces to internal organs to the communication which exists between all parts of the cellular tissue, and Mascagni to the lymphatics. Since veins, however, have been shown to possess an absorbing power, purulent matter has been supposed to be conveyed by them.

M. Dupuytren adopts none of these opinions. He does not deny that purulent matter may be absorbed by the lymphatics, but he asserts that it has never been traced beyond the lymphatic glands, and that in these its nature is changed. From reasoning he might be induced to admit the possibility of purulent matter being absorbed by the veins; but he has nowhere seen it demonstrated, and in many cases what has been taken for purulent matter furnished by the vessels during life may only be the effect of death. Many of the grayish and apparently puriform clots may be produced by *stasis* of the blood, the fever during life, and the heat which continues in the body for some time after death. Little disposed as he is to put faith in experiments, he conceives that one performed by him bears upon the question. Having long been struck with the appearance of purulent matter in the blood contained in the veins, in the neighbourhood of wounds, and sometimes in the interior of the body when there was no external wound, he conceived the idea of inclosing venous blood in glass tubes, which he placed under the arm-pits of patients attacked with traumatic fever. The result was that the blood assumed the same appearance as that which had arrested his attention. But, granting that purulent matter is absorbed, how does it happen that, instead of spreading itself over the whole animal economy, being mixed with the whole blood, there changed and thence excreted by the different emunctories with which the system is so well supplied, it proceeds to certain organs in preference to others? The difficulty of answering this question is increased by the consideration that purulent matter, even when injected in great quantity into the veins of a dog, never produces purulent deposits in the internal organs.

Amid this uncertainty there are some incontestible facts to which we must direct our attention. Purulent deposits and infiltrations take place in cases in which no wound has been inflicted, as has been observed by several authors, and especially by Quesnay, who has described not the deposits which followed operations, but those resembling them, which frequently supervene towards the decline of some severe fevers. Traumatic fever is one of the principal occasional causes, and those mentioned above are only determining causes.

Purulent deposits and infiltrations are favoured by traumatic fever in the following manner. This fever, which supervenes on wounds at the moment of their inflammation, having for its object the formation of more or less matter, may be reckoned so far a *pyogenic* fever. It bestows upon the humours which flow to the diseased part the nature necessary to convert them into purulent matter. It is therefore by no means wonderful that this tendency should spread beyond the humours which flow towards the inflamed part, and that, in consequence of its becoming general, and from causes which would be ineffectual in a state of health, suppuration takes place internally. The state of suppuration of any one part of an individual produces in other parts other suppurations, and in a word, suppuration induces suppuration, or produces in the body peculiar tendencies, which multiply themselves wherever any point of irritation exists. Pus, said the ancients, engenders pus, and the Baron adopts the axiom, explaining it, however, by the general tendencies which local suppuration produces.

From the above statement it will be easy to divine the treatment, both prophylactic and curative, recommended by M. Dupuytren. The circumstances which favour any complaints to which the patient is predisposed are carefully to be shunned, and means taken to overcome them. If, notwithstanding such measures, rigors and fever supervene, care must be taken to ascertain that these are not owing to the occurrence of erysipelas around the wound, or elsewhere, and if such be not the case, to endeavour to oppose the disease without being imposed on by the symptoms of indigestion. It must be confessed that the resources of art are of little avail. M. Dupuytren has employed or seen employed in vain the most powerful antispasmodics, tonics, stimulants, and revellents of every kind. Sometimes considering the rigors as nervous symptoms he employed antispasmodics which only served to conceal the symptoms; at other times cinchona, in all forms and in all doses, and the constant results were, drying of the tongue, increase of thirst, and a burning fever, which hurried the patient to his end. On other occasions, considering internal suppurations to be produced by purulent congestion without previous inflammation, he applied by way of derivatives numerous large blisters to different parts of the body, which, instead of alleviating the symptoms, increased and aggravated the general excitement. When patients were treated on the strict antiphlogistic plan they still fell victims to the disease; but their sufferings were so much alleviated, that the Baron is of opinion that this method is both more rational, and promises more success than any other. Convinced that if this plan does not infallibly cure, it at least is attended with fewest inconveniences, he adopted it during the latter part of his practice. Should it not succeed in ameliorating the condition of the patients, he recommends the subsequent use of tartar emetic in large doses, according to the plan adopted by Rasori.

Before quitting this part of the subject, we may mention that MM. Marjolin and Blandin found that the sulphate of quinine destroyed the periodicity of the rigors, but did not arrest the disease. In one case M. Breschet was successful in the application of several blisters to the trunk and extremities, while at the same time he administered diuretics and sudorifics internally. MM. Breschet and Sanson have advantageously employed large doses of tartar emetic.

We now proceed to the only other portion of the work which we can notice. After explaining what he means by compression, contusion, and concussion of the brain, M. Dupuytren proceeds to point out in what manner they may be recognised.

The diagnosis is not difficult if these affections be not complicated with each other. Compression, the immediate effects of a blow, may be distinguished by the symptoms which characterize it, beginning in a few seconds, and gradually increasing in intensity; by the principal of these symptoms being *hemiplegia* of the side opposite to that injured, stertorous breathing, &c.; while the effects of concussion gradually diminish from the moment of their appearance, and the chief symptom is stupor. Contusion again cannot be recognized till some days afterwards, and the symptoms are those of cerebral inflammation.

But these three states, concussion, compression, and contusion do not always exist separately. Most frequently they are more or less combined. When there is violent concussion with depression of the bone, the patient exhibits loss of consciousness and *hemiplegia*, with stertorous breathing at the same time, the first being characteristic of concuſsion, and the last two of compression. When there is compression and tearing of the *dura mater*, or effusion into the cavity of the arachnoid, if early enough on the spot, the surgeon may observe the commencement and progress of the paralysis, which always commences very soon after the accident. When concussion and contusion are combined, it is only after the fourth or fifth day that to the stupor characterizing the former are joined the inflammatory, local, and sympathetic effects, which mark the latter, and towards the tenth or twelfth day *hemiplegia*, indicating that the inflammation has terminated in suppuration. Where effusion and contusion co-exist, as *hemiplegia* is the result of the former, the latter can be recognized only by the state of the pulse, the colour of the countenance, and the other symptoms which manifest themselves on the fourth or fifth day after contusion of the brain, when inflammation has commenced. It is impossible, however, to distinguish the consecutive effusion from the primary, except, perhaps, by the aggravation of the symptoms which soon bring the patient to an end. In fine, when violent concussion, effusion of blood, above and below the *dura mater*, and contusion limited to a point on the surface of the brain, occur at the same time, and the surgeon happens to be called early enough to watch the progress of the accidents which supervene, he will observe the symptoms of the whole three affections develope themselves in the order which might be expected.

In taking leave of this work we must be allowed to remark that its great defect is diffuseness. This is the fault of the editors. In a course of lectures it is right to state every thing bearing directly on the subject; but when the substance comes afterwards to be printed, it would be but justice to spare the reader the repetition of matter to be found in the usual text-books.

We cannot help thinking that a large proportion of these volumes has been compiled by the editors, and that not in the neatest manner, from several works which we could name, as Cooper's Surgical Dictionary, Baron Larrey's works, &c. and, for any thing mentioned to the contrary, the student who should read this as his first book on surgery would be left to suppose that all the information contained in it was the result of the labour and ingenuity of M. Dupuytren himself. This is by no means an uncommon practice both in Great Britain and on the continent; but we must say that our British plagiarists are far surpassed by their brethren of France. The sooner this disgraceful system is done away with the better. At best it can secure those employing it but an ephemeral reputation, and in the end is more than likely to deprive them even of the merit to which they may justly lay claim.

ART. III.—*On the Anatomy and Diseases of the Neck of the Bladder and of the Urethra; being the Lectures delivered in*

the Theatre of the Royal College of Surgeons in the year 1830, *and in the Westminster Hospital in* 1833 *and* 1834. By G. J. Guthrie, F. R. S. Surgeon to the Westminster Hospital and to the Royal Westminster Ophthalmic Hospital. 8vo. London 1834, Pp. 284.

The importance of a knowledge of the anatomy and pathology of the urinary organs, especially of the male, has been acknowledged ever since surgery ceased to be cultivated empirically; and the ablest surgeons of the present century have expended no little labour in attempting to convey to their professional brethren full and accurate information on this subject. In the former volumes of this Journal will be found reviews of the most important works devoted to this department of the healing art; and in the notices of the treatises of Home, Whately, Abernethy, Bell, Howship, &c. an account will be found of the literature of the subject, so far as concerns the neck of the bladder and the urethra. Under these circumstances, and considering the high rank which Mr Guthrie deservedly holds as a surgeon, and the respect to which his opinions are entitled, we shall not on the present occasion offer any remarks of our own, but content ourselves with directing the attention of the reader to some of those parts in which the author either differs from his predecessors, or places his subject in a clearer point of view.

The first lecture contains a description of the structure and functions of the bladder, and a definition of what Mr Guthrie understands by its neck. The greater portion of this will be familiar to the surgeon, and we shall therefore confine our extracts to Mr Guthrie's views of the object of the obliquity of the entrance of the ureters into the bladder, to his definition of the neck of the bladder, and the remarks to which this gives rise.

> "It is presumed that the ureters have no valves at their orifices to prevent the reflux of urine into them after it has passed into the bladder, that they enter obliquely to answer this purpose, and that the coats of the distended bladder pressing on them in their oblique passage prevents this reflux from taking place. It appears to me that this mechanism is for the very reverse object; and that the ureter opens on the peculiar condensed structure, in order that the orifice may be constantly patulous; and the obliquity of the passage through the coats is for the purpose of giving facility to its being pressed upon by the muscular coats of the bladder, when the viscus is in a distended state, and in order to delay if not to prevent the further flow of urine into it. When the bladder is contracted and empty, the urine passes readily into and gradually dilates it until the desire for expulsion comes on and leads to its evacuation, but a little more or a little less seems to have no influence in preventing the urine from finding its way in, the weight of urine

descending from the kidney readily overbalancing to a certain point the resisting power of the coats of the bladder. When the bladder is, however, distended, its coats no longer yield easily, the ureter is pressed upon by the muscular wall in its passage through it, and the further entrance of urine is in a great measure prevented."—Pp. 6 and 7.

The term neck of the bladder Mr Guthrie restricts to that "small part surrounding the very opening itself into the urethra, and which, therefore, is a ring a little broader or thicker than the bladder itself. It is that portion on which the uvula is situated, the urethra being before, the bladder behind it; and the abruptness with which the opening commences, when viewed from within appears to me to warrant the acceptation of the term, whilst the diseases which affect this part render it worthy of an accurate definition. When it loses the natural elasticity with which it is endowed, and which it does from internal changes, the consequence of disease, it becomes firm and contracted, constituting a structure resembling in many respects those which take place in any part of the urethra. In common language among unprofessional persons, a stricture at the neck of the bladder is often said to exist; but gentlemen know nothing of the exact situation of internal parts, and suppose that an obstacle at six or seven inches distance from the orifice of the urethra must be at the neck of the bladder. It is not, however, within two inches of it generally speaking; and if you refer to the latest surgical authorities on this subject, you will find it, I believe, invariably stated, that stricture does not take place beyond seven inches, or the commencement of the membranous portion of the urethra, and all the derangements which occur beyond that part, are attributed to disease of the prostate. This is, however, a very great mistake; this gland is by no means so often in fault as it has been presumed; and no greater error has been committed in surgery, than that which supposes the third to be, as it is called, of the prostate, to be the common cause of those difficulties in making water, which occur so frequently in elderly people and sometimes in young ones. I do not deny that a portion of the prostate does enlarge and project into the bladder, preventing the flow of urine from it, but I mean to affirm that this evil takes place more frequently, and is more effectually caused by disease of the neck of the bladder, totally unconnected with the prostate, than by disease of that part; a fact I consider exceedingly important, because it leads to improvement in this branch of surgery, and to the introduction of more effective means of cure. A knowledge of this fact enables us also to understand how other diseases of the bladder take place, and how other symptoms not hitherto explained have arisen.—"Pp. 17 and 18.

This subject Mr Guthrie follows out at greater length in the second lecture, in which, after describing the prostate gland and the prostatic portion of the urethra, and asserting that it can be proved from papers in the possession of the college, that Mr Hunter had anticipated Sir E. Home in all his conclusions respecting diseases of these parts, he states his opinion that the elastic structure at the neck of the bladder and the prostate may either of them be diseased without the other being necessarily involved. This view he supports by a reference to several preparations which he describes.

In lecture third, in describing the membranous portion of the urethra, he endeavours to show that the muscles described by Mr Wilson are only half muscles, and that they are not sexual. As this is rather an interesting subject, and the reader may not find it so easy to display them as Mr Guthrie's assistants and engravers have done, we transcribe those passages in which they are referred to.

> "Mr Wilson, in the first volume of the Transactions of the Medical and Chirurgical Society of London, gave a particular description of two muscles surrounding the membranous portion of the urethra, which attracted the attention of every anatomist in Europe. They have been acknowledged by every one, although none have described them in so precise and apparently accurate a manner as he has done. It is, however, a very curious circumstance, that Mr Wilson only described half a muscle, and that the error should not have been detected until the present time."
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> "Mr Wilson, as I have stated, described his muscles with great apparent accuracy, and declared it was exceedingly easy to find them. To do this he gave directions, pointing out the close connection between them and the *levator ani* of each side, which induced many anatomists to think they were a part of these muscles, and that distinguishing them separately was after all an act of unnecessary minuteness. I shall content myself with remarking, that this arose from the error Mr Wilson unaccountably fell into of examining these parts from a side view only, and made from the left. If he had dissected from behind forwards, I think he must have discovered the whole of the muscle, of which he has described only a part. Desirous of having preparations to show at my lectures which should enable me to demonstrate all these parts in the clearest manner, I set Mr Taylor to work last year to prepare them. He could not, however, succeed to my satisfaction; the muscle was never perfect according to Mr Wilson's description of it. On one occasion dissecting from behind forwards, and not by a side view, he made out an attachment on the left side formed by some fibres, running from the ramus of the ischium to the membranous part of the urethra; this I took to be an accidental occurrence at the time; but keeping it in recollection on making some more dissections during this winter, and there are twenty before you, I desired that particular attention might be paid to this point; and the results of our labours, that is of Mr Taylor, Mr Bedford, and mine, enable me to show you these muscles in a complete state. The two preparations I place before you now are the most perfect. One shows the membranous part of the urethra surrounded by a well-defined muscle.

On the upper part there is a central median line of tendon which runs backwards to be inserted into the fascia, covering the upper surface of the prostate; and again forwards on the urethra through the triangular ligament, to be inserted in front of it, near the union of the *corpora cavernosa.* On the under part a similar tendinous line is to be observed, which is attached backwards to the fascia underneath the apex of the prostate, and forwards to the central tendinous point in the perinæum. The muscle on its upper surface is covered by fascia descending from the pubes, which adheres to it, and this I take to be what Mr Wilson described as the tendinous origin of his muscle, and from which he supposed the fibres descended to surround the urethra, which they really do not. From the median tendinous line in the upper part of the urethra, the fibres pass outwards on each side converging towards the centre, where they form a leg, as I term it, of muscular fibres. On the under surface the same thing takes place; and a leg on each side being thus formed from the superior and inferior fibres running from each half of the urethra, they pass outwardly, that is, transversely across the perinæum, to be inserted into the ascending ramus of the ischium a little below its junction with the descending ramus of the pubes on each side. These attachments are cut off in this preparation, but when I pull on each of these legs, you see that they surround the urethra like a sling.

"In the preparation I now present to you nearly all the parts are *in situ.* You see the muscle or muscles, and their origins, one on each side, which are very peculiar. They are inclosed between the two layers of fascia, forming what is commonly called the deep perinæal fascia. The interior layer is turned down as well as the triangular ligament from the pubes; and you see the muscle on each side with its origin, and lying between the anterior and posterior layers of the fascia. The pudic artery on the right side runs in front of it, and you see here the division of that vessel into the two arteries of the *corpus cavernosum* and of the dorsum of the penis. Cowper's gland on each side lies under or posterior to the muscle, and seems to be enveloped by it. The inner layer of fascia passing on the inside of the muscle reaches the inner edge of the *levator ani,* round which it turns to invest the urethra and prostate; so that this fascia separates these two muscles, the fibres of which also run in different directions. This is distinctly shown, and it is manifest that the muscle I have described is inclosed between the layers of fascia, which is, I presume, the reason why it has escaped the observation of the very many minute anatomists who have investigated these parts.

"The preparation I now show you is an internal view of the pubes, with its descending rami and the ascending rami of the ischium. The deep fascia of the perinæum is preserved: the urethra is seen passing through the triangular ligament, surrounded before it passes by the muscles in question; the internal layer of fascia is turned down, and the two legs of the muscles are seen passing outwardly or transversely to their origin.

"In the two recent dissections I now show you, the same muscle or muscles are seen in the female, proving, therefore, by their existence that they are not sexual muscles, and that the opinions of Mr Wilson and Sir Everard Home, who believed them to be so were erroneous, whilst there can be no doubt of their being intimately and essentially connected with the due retention and transmission of the urine. Taken as a single muscle, it has then two origins and five insertions, or six if the superior attachment of Mr Wilson be considered double. When it acts, which it must do from its origins, from the rami of the pubes, it can compress the urethra so as to close it, I conceive, completely after the manner of a sphincter; whilst from the attachments of the muscles from their origin, and being inclosed between the layers of fascia, they must also draw it towards the pubes. This muscle has a singular resemblance to the *accelerator urinæ*, situated outside the fascia, and is capable of acting, I am led to conclude, with great energy. The preparations are preserved in the Museum at the Ophthalmic Hospital, Chandos Street, Charing-Cross."

The next four lectures we must pass over, as, though interesting, they contain nothing new. In the eighth and ninth some excellent practical directions are given for examining the state of the urethra, and a series of observations on the means of cure to be adopted if stricture should be detected. In examining a stricture, he recommends a bougie to be introduced of such a size that it will pass without inconvenience, and after that has been allowed to remain for a quarter of an hour, a larger one to be substituted, "for a larger bougie can always be introduced if it follows a small one, than can be got into the bladder without such a precursor." The bougie ought never to be used for the purpose of dilatation oftener than every two days, and if there be considerable irritation of the urethra, not oftener than every third or fourth day. When the stricture is of some standing, the patient ought to be taught to introduce the instrument himself, that he may use it at intervals of a week or longer, as circumstances may direct. Mr Guthrie is an advocate for the use of the caustic bougie, armed with nitrate of silver, although from the disrepute into which it has fallen he does not venture to propose it to his patients, till he has gained their confidence, and perhaps only after he sees that the progress of the cure by other means is slow. He conceives that it does something more than merely take off spasm and irritation, though it by no means produces a permanent cure. Mischief occasionally results from its employment, but this arises either from its being incautiously applied, or from some peculiarity of the patient's constitution.

In the tenth and eleventh lectures, Mr Guthrie, after some remarks on suppression and retention of urine, and the various plans of treatment, proceeds to consider the different operations proposed for the relief of the bladder in obstinate retention of urine, when other means have failed. "Four are recommended by different modern authors, 1*st*, to puncture the bladder above the pubes; 2*d*, through the rectum; 3*d*, to open the urethra from without; 4*th*, to divide the stricture by an instrument passed along the urethra." The first, Mr Guthrie conceives, ought never to be performed in cases of retention of urine from stricture. The operation through the rectum, notwithstanding the peritoneum, sometimes descends between the rectum and the bladder, is the operation which is to be preferred by those who are unacquainted with the anatomy of the parts in the perineum. The third operation, that of opening the urethra from without, even will be simple or otherwise according to the seat of the stricture. If this be anterior to, or at the commencement of, the bulbous portion of the urethra, the operation is very easily performed. But when the disease is situated at the termination of the bulbous, or commencement of the membranous portion, various circumstances conspire to embarrass the operator. In the *first* place, it is impossible to say what mischief long continued disease may do to the neighbouring parts. When the incision is made on the left side of the raphe of the perineum, it being impossible to pass a catheter in consequence of the stricture, it is difficult to detect the urethra. The hardness and derangement of the soft parts so frequently met with in such cases, and the urethra not being dilated behind the stricture, are circumstances which increase the difficulty of the operation, and sometimes deter the surgeon from performing it. "When the disease is situated at the termination of the bulbous portion of the urethra, or even farther back," Mr Guthrie recommends the operation to be performed in the following manner:

"The patient being placed and secured as in the operation for the stone, a catheter or sound is to be passed down to the stricture and held steadily against it, the concavity being as usual upwards, the point directly applied to it. The rectum having been previously cleared by an enema, the fore-finger of the left hand being duly oiled is to be introduced into it, and the membranous part of the urethra and the prostate are to be examined as well as the bladder, the state of which will in all probability have been previously investigated. If the membranous portion of the urethra is dilated by the urine so much the better; but the object of introducing the fore-finger is to ascertain the relative situation of the upper part of the rectum and the urethra, which latter part only touches or is nearly in direct application to the rectum, at the termination of its membranous part, and the commencement of its prostatic portion. There is a certain distance which is greater or less in different individuals, between the last inch of the rectum and the urethra placed above it. The two parts form two sides of a triangle, the apex of which is the prostate, the base the external skin. It is within two lines of the triangle that the operation is to be done. The surgeon taking the catheter in his right hand, whilst the fore-finger of the left is applied to the upper surface of the rectum, moves the point upwards and downwards, so as to communicate with the fore-finger of the left hand, and to convey to it a knowledge of the situation of the extremity of the instrument, and particularly of the distance between them which the motions given to the catheter by the right hand will clearly indicate. The thickness of the parts between the obstruction and the rectum can be estimated with sufficient accuracy both at the point where the left fore-finger is applied, and at the suface of the skin; for although the membranous part of the urethra cannot be easily felt from an incision made on the left side of the perineum it can always be distinguished from the rectum. The next step of the operation is to divide the skin, cellular membrane, fascia, muscular and tendinous fibres, which may intervene between the upper surface of the rectum, and the under surface of the anterior and middle portions of the membranous part of the urethra. This is to be done by a straight, blunt-backed, narrow, sharp-pointed bistoury, fixed in its handle; and there are two ways of commencing the operation: the first when the obstacle is behind the bulb, and the external parts are not diseased, may be done by a straight incision, in a perpendicular direction; in which manner the operation may always be done if the surgeon is well acquainted with the anatomy of the parts; but if he is not, or they are very much hardened, and consequently unyielding, a transverse, curved, or crescentic incision should be made across the perineum, the centre of which corresponds with the raphe, and is one quarter of an inch above the verge of the anus, or as near that distance as may be with due respect to the rectum. This gives room, and allows the parts to be separated as much as they will admit. If the transverse incision is not adopted, the point of the straight bistoury is to be placed on the skin a little above the verge of the anus, the cutting edge being above, the blunt back towards the rectum, the handle being a little depressed, the point a little inclined upwards. The degree of inclination necessary to carry the knife inwards for the distance of an inch, and clear of the rectum, will be indicated by the finger in that part, and the eye of the operator will correspond with the point of the fore-finger so that the bistoury may be steadily pressed into that extent, and then carried upwards and brought out in the exact median line, making an external incision of at least an inch and a quarter to an inch and a-half, as regards the external parts; and which may be then extended as space is wanted for the prosecution of the operation. The part being sponged the surgeon again introduces the bistoury in the median line, the point being directed upwards and backwards towards the urethra, and he may then deepen the cut. The fore-finger in the rectum will always tell him where the back and consequently where the point of the bistoury is. The opening will now be sufficiently large to allow the operator to lay aside the knife, and to feel for the urethra with the point of the fore-finger of the right hand, an assistant keeping the catheter steady against the stricture, the end of which will now be readily felt. If the point of the fore-finger of the right hand does not go beyond it, and touch the sound part of the urethra, which is dilated by the urine in the generality of cases, the knife is to be resumed, and the fore-finger, being withdrawn from the inside of the rectum, is to be placed in the wound on the outside of the rectum, which is to be depressed as much as possible; the back of the knife is then to be turned to it, whilst the point exposes and opens the urethra, and which it can do very easily near the apex or transverse portion of the prostate, or at the termination of the membranous part of the urethra; but it is not necessary to go so far back, and the membranous portion may be opened at its middle with every advantage, and with perfect safety to the gut."—Pp. 166—170.

In the eleventh lecture Mr Guthrie enters into the discussion of the question of dividing or not dividing the stricture after the urethra has been opened behind it, and gives it as his opinion that it is a question of degree. The ordinary treatment may be adopted when the stricture is of no great extent, but when it is so thick, hard, and extensive as to render it probable that the cure will be tedious it ought to be divided. In support of his opinion he tenders several reasons which we have not space to transcribe.

In the same lecture we have many useful observations on the extravasation of urine in consequence of rupture of the urethra, in most if not all of which he has been anticipated by other writers on the subject.

The remaining five lectures are devoted to the treatment of impassable stricture, diseases of the prostatic portion of the urethra, chronic enlargement of the prostate gland, chronic thickening of the neck of the bladder, and the method of treating the bar or stricture occasionally met with at the neck of the bladder, none of which we can notice at present.

In concluding this brief notice of Mr Guthrie's Lectures we cannot help observing that he has not done justice to himself in permitting his observations to assume a permanent form in the shape which they have at present. In a course of lectures, a looseness of style, and a freedom of expression may be excused, and it may even be necessary that the language in which the ideas are clothed should be somewhat diffuse. The case, however, is altered when the same matter is to be committed to the press. The anecdote, repartée, or humour which enlivened the lecture are but encumbrances to the treatise; and the reader, when tantalized in his search after the author's opinions, is apt, when he finds them, to undervalue them, and perhaps think them scarcely worth the trouble. We conceive that, short as the work before us is, it might have been advantageously reduced to one-half of its present size.

Notwithstanding all this, however, and that little that is new is to be found in the volume, we have no doubt that it will be a favourite, especially with junior readers, and detract nothing from the well-earned reputation of the author.

ART IV.—1. *On Vaccination in Calcutta.* By WILLIAM CAMERON, Esq. Presented February 5, 1831. (Medical and Physical Transactions of Calcutta, Vol. v. p. 385.)

2. *On the Efficacy of Vaccination in India.* By H. S. MERCER, Esq. Presented 2d June 1832. (Medical and Physical Transactions of Calcutta, Vol vi. p. 265.)

3. *An Account of some Experiments relative to Vaccination.* By G. G. MACPHERSON, Esq. Presented 3d December 1832. (Medical and Physical Transactions of Calcutta, Vol. vi. p. 169.)

Mr CAMERON informs us that the practice of vaccination has encountered in Calcutta much difficulty and opposition, principally in consequence of the Tekhadars or Native Inoculators, who, apprehensive that the simplicity of the method would deprive them of much of the influence and emolument which they were accustomed to derive from the practice of inoculation, used every means in their power to prevent the adoption of vaccination by the inhabitants. It appears from authentic information, that, at the time at which Mr Cameron digested his report, from ten to fifteen of these Tekhadars were annually employed in Calcutta in inoculating small-pox among the natives.

The Tekhadars commence their variolating operations in Calcutta in February, and continue them till the beginning of May; when they proceed to the up-country stations expressly for the same purpose.

In this manner the variolous poison is multiplied and disseminated among the community, and an inexhaustible and incessant focus of variolous contagion is maintained in the atmosphere of Calcutta, from which it is diffused and propagated in every direction through Bengal.

To counteract the effects of this pernicious system, Mr Cameron, when invested with the duty of superintending vaccination, as vacancies occurred, appointed to the office Tekhadars who were previously obliged to swear that they would not engage in small-pox inoculation. With this precaution Mr Cameron states that he found them diligent and attentive to their duties. Mr

Cameron very judiciously recommends the adoption of the same practice generally as the most effectual means of checking the diffusion of the variolous poison through the city of Calcutta, and the country of Bengal generally.

In consequence of the prevalence of small-pox in 1830 at many of the stations under the Presidency of Bengal, a circular was issued by the Medical Board, requesting the Medical Staff to furnish information on the subject, and more especially desiring a statement of any cases in which small-pox had ensued after vaccination.

According to Mr Cameron the replies showed that, though small-pox had prevailed extensively, and at some stations assumed the epidemic form, not one case was related of genuine small-pox succeeding to perfect vaccination.

This statement has been rather unceremoniously controverted by Mr Mercer, who asserts, that the deduction is erroneous, and adds, that, in the whole of the documents adduced by Mr Cameron, cases are recorded of a virulent and even fatal character of the varioloid disease in small-pox succeeding to perfect vaccination. "I refer," says Mr Mercer, "to the reports themselves, and leave it to be decided, whether Mr Cameron is justified in his conclusion, that not one case is recorded of genuine small-pox succeeding to perfect vaccination."—P. 281.

It is not our desire, nor have we leisure in this place, to enter into any controversy on this matter. But it may be proper to inquire whether the reports do contain any evidence of the kind sufficiently strong to authorize the manner in which Mr Mercer speaks of the report of Mr Cameron. We are satisfied that nothing is more injurious to the true interests of the practice of vaccination than ascribing to it greater prophylactic powers than it really possesses; and we do not think that Mr Cameron is likely to commit this error, or indeed any one calculated to impair the confidence of the Calcutta public in the antivariolous powers of vaccination.

The question relates to genuine small-pox succeeding after perfect vaccination; and this hinges upon two points,—whether the small-pox were genuine, that is, we presume, unmodified, and whether, in the cases in which they were so, the vaccination had been perfect. With regard to the first point, whether any of the cases referred to by Mr Cameron were genuine small-pox, it appears to be pretty clearly established, that all of them, with two exceptions, betrayed marks of modification distinct in proportion to the distinctness with which it could be ascertained that vaccination had been perfect. In all the letters subjoined to the report of Mr Cameron, we find several cases of small-pox after small-pox mentioned, and not a few of modified small-pox or small-pox very severe after vaccination (Mr Lindsay's report);—none fatal; and we find instances of fatal small-pox in natives who were supposed or said to have been vaccinated. (Report of Mr Swiney, p. 400, and Mr Gerard, p. 414.) The report of Mr T. Smith of the Allahabad Division only records two cases of *fatal* small-pox after vaccination. One took place in the person of a country-born female, the wife of one of the soldiers in the garrison, who had been vaccinated in Calcutta. The fever was from the first most formidable, and followed by a most profuse eruption of confluent small-pox, which terminated life on the eighteenth day. The second fatal case supervening on vaccination took place in the person of Lieutenant Halhed of the 32d Regiment. (p. 413.)

These are the only well-authenticated fatal cases of small-pox after vaccination believed to be perfect in the whole reports; and when we consider, that the gentleman who reports them expressly states, with regard to the cases which did not terminate fatally, that though severe, especially so far as regards the eruptive fever, yet the circumstance of their having been previously vaccinated, had *greatly modified* the disease, we do not perceive that these two cases invalidate very strongly the general accuracy of Mr Cameron's statement. It is to be observed that the fact of *perfect* vaccination, or the full influence rather of the vaccine *virus*, was still to be ascertained, and that consequently the general accuracy of the statement of Mr Cameron must be regarded as unimpaired till that be done.

In the report of Mr Gerard, surgeon of the Nusseree Battalion, at Soobathoo, it is stated that several deaths occurred from *variola* in 1830 among the inhabitants of Soobathoo, in persons *said* to have been previously vaccinated; "but," it is added, "as Mr Gerard did not himself see every case, he has some doubts as to the perfection of the vaccine in these. He states that in those he witnessed, and in which *variola* supervened, the vaccine had *not been regular*."

One point of some importance mentioned by Mr Swiney deserves to be impressed. Mr Swiney states, that though in all the cases which took place among persons in the rank of officers, the individual was held secure by vaccination; yet a marked difference was perceived between those who were born in India, and such as had only left England in their youth, and had been vaccinated at home. "In the latter the general character of the disease was that of modified small-pox, although among them cases of confluent small-pox were not wanting; whereas all the fatal cases were found among those who, though of European parents, were born and vaccinated in this country; except one which was complicated with apoplectic tendency." This shows that fatal cases had occurred after reputed vaccination, and also that vaccination performed in India is less to be relied on, or less prophylactic than vaccination performed in England.

It is further to be observed, that all the reporters denominate and regard as *modified* the small-pox cases which had taken place after vaccination; and as Mr Cameron has merely repeated the statements of these gentlemen, in representing the cases thus occurring to be *modified*, that is *not genuine*, we do not see that his deduction was thereby entitled to the criticism pronounced on it by Mr Mercer.

Passing, however, from this subject, it is gratifying to observe, that, while small-pox, unopposed by vaccination, continues to preserve its character of a severe, a mutilating, and a fatal disease, yet, as vaccination is becoming more familiar and general, and as its real merits are more fully understood by the native population of Hindoostan, the influence of small-pox is progressively diminishing. In the course of eleven years, between the years 1818 and 1829, vaccination has been communicated to 335,575 persons in the presidency of Bengal, or about 33,000 of an annual average; and the reports of the surgeons amply and clearly testify that, though small-pox is still liable to recur from the causes already mentioned, yet the disease is stripped of much of its danger in proportion as the practice of vaccination is extended.

The Reports of Mr Cameron and Mr Mercer concur in showing the justice of the conclusions which have several times of late years been brought before the public in the pages of this Journal. It has been here repeatedly shown that vaccination is not so perfect and absolute an antidote to the effects of variolous infection as Jenner and his immediate adherents imagined. But it has been also shown, that, while it does not positively exclude an attack of small-pox, nay, does not prevent in a very small proportion of cases (1 in 5000) the chance of small-pox terminating fatally, it reduces that chance to an inconceivably small proportion, deprives the variolous poison of its most virulent and malignant effects, and must have been the means, under Providence, of preserving not only health, but features, sight, and life to many thousands. In this respect, it presents an incomparable superiority over the practice of inoculation; since the latter preserves, multiplies, and diffuses a foul infectious poison, while the former not only excludes this, but, if uniformly and universally adopted, might in process of time extinguish it entirely. The very facts adduced to prove that vaccination is not an absolute prophylactic, are also the most indisputable proofs of the remarkable influence which vaccination exercises over the variolous poison.

"In many cases," says Mr Cameron, "that had been previously vaccinated, a varioloid disease showed itself, went through its course mildly, and disappeared in a few days. This showed, that, though vaccination is not so perfect an antidote as it was once thought to be against small-pox, it is at least the best that is to be had. That this is the state of the fact, no one can reasonably deny who considers for a moment the degree of protection that was actually afforded in the cases mentioned in the replies to the Medical Board's Circular, even in the midst of a desolating visitation of the disease."

"I am particularly anxious," says Mr Furnell, assistant civil surgeon at Sylhet, "to have vaccination established, from having witnessed its utility in the late comparative exemption of this station from the dreadful ravages that have annually been caused by the small-pox in this district."

Mr A. M. Clarke also, after mentioning that, at the city of Mooradabad, small-pox had prevailed epidemically, and had destroyed in the course of six months 653 persons, chiefly young, and 598 in the suburbs,—adds, that, so far as he could ascertain, no case of small-pox after vaccination occurred in Mooradabad, and that the extreme prevalence and fatality of the disease had served to remove the prejudices of the natives against vaccination; for they observed that vaccinated subjects escaped small-pox, when others were ill on every side, and in consequence Mr C. had daily numerous applications to vaccinate both old and young.

As to the prevalence and fatality of small-pox in Hindoostan, and the occurrence of cases of small-pox after vaccination, though various attempts have been made to explain them upon other grounds than that of the hypothesis of a merely partial or approximative prophylactic power, we do not perceive that they are entitled to much attention. The great and general means are the idea, that the vaccine virus was inert, and that in the transmission through the system of many individuals it had become deteriorated and effete. This opinion appears to be entertained not only by Mr Swiney of Cawnpore, and by Mr Mercer, if we do not misunderstand them, but also by the whole Medical Board of Calcutta, if we are permitted to reason from their circular prefixed to the paper by Mr Macpherson. Without pretending to determine whether it be well founded or not, we may be permitted to say, that it is not consistent with the usual physiological laws by which the actions of animal poisons are regulated, to believe that the vaccine *virus* can become deteriorated or enfeebled. If we suppose it did, there is no difficulty in supposing it to become annihilated. But we never yet heard of any animal poison becoming completely annihilated, where it had subjects on which to operate, and favourable circumstances for its action. The effects of plague, of small-pox, of *lues venerea*, and typhous fever, are at the present day as characteristic as when the appearances of these diseases were first described by medical observers. Without, however, giving our speculations on this subject, we shall notice shortly what has been done by Mr Macpherson to determine this point at the request of the Medical Board of Calcutta.

This body, adverting first to the numerous instances of varioloid disease of a dangerous and even fatal character, which had occurred in persons who were previously supposed to be protected, if not against attack, at least against a fatal issue, and the consequent diminution of public confidence in the prophylactic powers of vaccination, proceeded on the supposition that this apparent failure is to be ascribed to a deterioration and degeneration of the vaccine *virus*, and requested Mr Macpherson to institute such experimental investigation as might be requisite "for the purpose of regenerating the *virus*, and restoring it to its pristine activity, if so be that it has degenerated."

It is unnecessary to notice in detail the first experimental vaccinations which Mr Macpherson performed according to the method of Mr Bryce, which he strongly recommends. It is enough to say, that Mr Macpherson is inclined to adopt the views already given a little above, on the unalterable and indestructible nature of the vaccine disease. "Were failures," he says, "entirely owing, as some suppose, to deterioration in the quality of the lymph, from having been transmitted through so many thousands, those who of late years have been vaccinated would be much more liable than their predecessors to small-pox. But daily experience proves this to be by no means the case."

Mr Macpherson appears to have proceeded upon the supposition originally entertained by Jenner, and subsequently revived by Dr Baron, Dr Sonderland, and others, that the vaccine disease was merely the effect of the variolous poison upon the system of the cow; and he naturally thought that, if the virus were deteriorated, this was a good method of reproducing it. Accordingly, while small-pox was raging with the most destructive havoc in Moorshedabad and its vicinity during the months of May, June, July, and August 1832, Mr Macpherson made repeated attempts to communicate small-pox to cows by exposing them to variolous contagion, covering them with the blankets of patients labouring under the disease, and by inoculation; but, though in these instances evident feverish symptoms were induced, and all these symptoms were followed by the appearance of a few small ulcers upon the abdomen, yet the matter of these ulcers did not communicate the disease, nor did the other animals exhibit any proof of local variolous or vaccine eruption. This, it will be remembered, was the experiment of Dr Sonderland tried in a more pointed and specific manner than was done by that gentleman.

Disappointed in this mode of verifying the origin of the vaccine vesicles, and proving their identity with the variolous pustules, Mr Macpherson next applied to two young cows vaccine lymph taken from the arm of a healthy child on the eighth day. Both cows presented slight fever with local inflammation on the third day. One on the fifth presented a vesicle, from which two children were inoculated, with the effect of producing in both local and slight constitutional symptoms; but the pustules were elevated and opaque, void of areola, ran their course in eight days, and were therefore inferred to be spurious; and consequently no attempt was made to carry the experiment farther.

A third method, however, at length accidentally presented itself of throwing some light upon this obscure question. It has been long known that the cows in Bengal, and, we believe, we may add, even the whole of Hindoostan, are subject to a disease which is denominated *Mhata*, *Bussunt*, or *Gotee*,—appellations equivalent to that of small-pox or *variola* in the human subject. This disease, which usually appears about the end of August or beginning of September, was announced on the 24th of August 1832, to be prevalent among several cows belonging to a native of Moidapore.

The animals first affected, amounting in one shed to 18 or 20, after being dull and stupid for a day or two, were seized with distressing cough and a great accumulation of phlegm in the mouth and throat. They had at the same time either no inclination for food, or were unable to masticate and swallow. The sufferings of the animals were most intense on the fifth and sixth days, when the fever was considerable, and pustules appeared over the whole body, but especially on the belly, terminating in ulceration and ejection of the hair. The disease appeared to be most evidently seated in the mouth and throat, which were in some instances extensively ulcerated, and which was conceived also to extend to the stomach and along the tract of the alimentary canal.

In those cases, in which the mouth and throat were very much affected, the animals seemed to die from inanition; whereas in cases in which the affection of the mouth and throat was so inconsiderable as not to impede mastication and deglutition, recovery was more rapid than the other symptoms and the reduced state of the animals would have led the observer to expect. The mortality was calculated at from 15 to 20 per cent.

During the presence of this disease, the secretion of milk is either suppressed or, if secreted in small quantity, is not used; and hence the milkers are either never or rarely affected by the disease. This, with the other circumstances, is sufficient to show that the disease of the cows in India is much more severe than in England.

It is farther observed by Mr Macpherson, as a remarkable circumstance in the history of this episootic, that while the cows were thus sickly and dying, no case of small-pox among the natives in the village occurred. This statement, however, is at variance with one made by Mr C. Campbell, in regard to small-pox in the Saugor division. This gentleman informs us, that while small-pox was raging with great severity in the pergunnahs of Jubbulpore in the spring and summer of 1830, great numbers of cattle died of a disease which the natives distinguish by name *Mhatah*, the same term which they use for small-pox.

The epizootic now mentioned is not believed to be contagious; and though the natives were averse from going among or handling the cattle during the time of its prevalence, they expressly disavowed all idea of infection or contagious propagation.

The Hindoos in the meantime watched the proceedings of Mr Macpherson with such jealousy and suspicion, that he might have been disappointed in his plan of trying the vaccinating and prophylactic power of the matter generated by this disease, had it not proved epizootic, and affected all the cattle in the neighbourhood, and among others two belonging to one of his own vaccinators. These he caused to be covered with blankets, exposing to the air only the udder and teats. On the seventh day two small pustules appeared on the teats of one, which dried on the tenth, and the crusts were removed on the twelfth day.

From these crusts eleven native children were vaccinated. On six no effects were produced; two had slight inflammation on the arm on the third and fifth days; two had considerable local inflammation, and slight heat of surface on the fifth, sixth, and seventh days; but though the puncture was surrounded by distinct induration no vesicle was formed. The arm of the eleventh child, who was about five months old, after suffering much from fever for four days, presented on the morning of the fourth slight inflammation, which terminated on the fifth in a vesicle, which increased to the ninth day, with all the characteristics of the vaccine vesicle.

From this child two other children were vaccinated with complete success, but with very severe symptomatic fever. From these again five children were vaccinated with the same results; and no difficulty was now experienced in propagating the disease.

To demonstrate the complete prophylactic power of this lymph, Mr Macpherson inoculated two of the children with small-pox, and found them secure; and some time afterwards five children vaccinated in the Gorah Bazaar at Berhampore were accidentally exposed to variolous contagion with perfect immunity from the disease.

Such is the history of this method of the reproduction of the vaccine lymph in India given by Mr Macpherson. It will be seen that it accords very closely with the doctrine originally proposed by Rammazzini regarding the murrain (*lues bovilla*) of horned cattle in Italy, afterwards taught by Layard and Vicq-D'Azyr, as to the epizootic which prevailed in France and England in the year 1779, and which was, at a still later period, for some time maintained by Dr Jenner, and has since been revived by Dr Baron and Mr Playne of Gloucester, and by Dr Sonderland of Barmen. It accords with that doctrine in so far as both Dr Layard and Vicq-D'Azyr regarded the epizootic described by the former as identical with the small-pox in the human body; in so far as Jenner originally regarded the vaccine disease as mere *variola* after passing through the system of the cow, and modified by that transition; and in so far as Dr Baron, in his account of the Life of the Great Father of Vaccination, expresses the opinion, that cow-pox or *variolæ vaccinæ*, as prevalent in Gloucestershire, Devon, Dorset, Somerset, Hampshire, Buckinghamshire, and other midland and pastoral counties of England at the period at which Jenner announced their existence, were the local remains of the epizootic malady which prevailed so extensively at the period at which it was described by Dr Layard.

It is, however, unfortunate that the description of Dr Layard is not sufficiently precise to enable us to determine whether the epizootic of England from which Dr Baron attempts to trace the origin of cow-pox, be the same with that of India, from which Mr Macpherson believes that he has also propagated that disease. It is also a singular peculiarity, that while the cows affected with the vaccine eruption in England should suffer so little, that a death is never heard of,—those in India should suffer so much, and be cut off in considerable numbers. Lastly, is it probable that the disease which committed such havoc in the time of Dr Cromwell Mortimer, and Dr Layard, is identical with the mild and benignant eruption from which vaccine lymph was procured by Jenner? In the absence of more positive facts and more specific information, it is not unreasonable to suspend any decided judgment.

Meanwhile the experiments of Mr Macpherson must be allowed to be highly interesting and important;—interesting in tracing the vaccine disease with probability to the varioloid epizootic,—and important in discovering a source from which matter may be always conveniently obtained. We hope, as the disease is annually prevalent in Hindoostan, that some of the members of the profession in that country will repeat the experiments of Mr Macpherson, and collect information sufficiently precise and ample to put an end to all doubts upon a subject so important.

ART. V.—*The Surgeon's Practical Guide in Dressing and in the Methodic Application of Bandages; illustrated by numerous Engravings.* By THOMAS CUTLER, M. D. late Staff-Surgeon in the Belgian Army. 18mo. London, 1834, pp. xvi. and 195.

To those who are aware how much the success of a professional man on his entrance into practice, may depend on the manner in which he applies a bandage, and to how great inconvenience and even danger a want of a proper knowledge of the subject may give rise, it will appear astonishing that in Britain this department of surgery has been so long neglected. In the various manuals and text-books of surgery, and especially in Mr Samuel Cooper's Dictionary, we no doubt meet with many practical remarks and directions, which are calculated to be highly useful to the student, but, with the exception of these, he is left to obtain an acquaintance with this subject as chance may direct, and unless he should happen to be the pupil of a surgeon in extensive practice, or be attached to some hospital, the probability is, that he enters upon the exercise of his profession with an ignorance both of the theory and practice of bandaging, which is likely to lead him into embarrassment.

To the formation and application of bandages the French pay great attention. Distinct treatises have been composed, and at present, or at least very lately, courses of instruction were given on the subject, in which not only were the principles explained by lecture, and illustrated by specimens, but the pupils were called upon each to apply the various bandages according to the several methods pointed out. In these circumstances, we are happy to see the attention of British students attracted to the subject by Dr Cutler's useful little work. We cannot give the reader a better notion of the work than by quoting part of the preface.

"The work is divided into two parts: the first treating of dressings and bandages in general, and the principles of their application; the second of bandages in particular, classed according to the regions of the body, under the respective heads of bandages of the head and neck, of the trunk, of the upper and lower extremities. Each bandage is moreover subdivided into its composition, its application, and its use, particular observations being added as occasion may have required.

"Throughout the whole work, which is illustrated in various parts by wood-cuts, carefully executed by Messrs Bagg and Son, the author has endeavoured to render the details as brief as possible, without the sacrifice of either clearness or exactitude. He has drawn the materials necessary to its execution from practice, from personal observation in the British and continental hospitals, and from the works of the most distinguished writers upon surgery generally, or upon this department in particular of the science. Introducing nothing but what has appeared to him decidedly useful, he has still allowed for cases of great consequence an ample choice of means."

In conclusion, it is proper to state that the work is published in a very elegant manner. The descriptions are perspicuous and succinct, and the cuts are admirably adapted to illustrate the text. It is a work that must prove useful not only to the student, but to the general practitioner.

ART. VI.—*Observations on the Illusions of the Insane, and on the Medico-Legal Question of their Confinement. Translated from the French of M. Esquirol, Medecin en Chef de la Maison Royale de Charenton, &c.* By WILLIAM LIDDELL, Member of the Royal College of Surgeons, &c. 8vo. London, 1833. Pp. 89.

WE beg to call the attention of medical men to the work, the title of which we have prefixed to this notice. It contains a translation of two papers by Esquirol, on subjects of very great importance, which have not hitherto received that consideration to which they are entitled. The one is the Illusions of the Insane, the other, the medico-legal question of their Confinement. We shall give a short account of each.

In the first memoir, which was read at the Institute on the 2d October 1832, and published in the 31st volume of the *Archives Générales* for January 1833, M. Esquirol explains the difference between hallucination and illusion. When an insane patient fancies that an impression is made on one or all of his senses, while no external object capable of producing any such impression is present, as, for instance, if a deaf man thinks that he hears, or a blind man that he sees, it must be obvious that it is altogether an intellectual phenomenon totally independent of the sense to which it refers. The ancients had observed this so far as it had a reference to sight, and had given it the name of *vision*. But M. Esquirol, from an analysis of the thoughts of the insane, is convinced that it its produced "by the action of the brain re-acting upon the sensations previously received by the other senses, as well as by that of sight," and has bestowed upon it the name of *Hallucination*. In hallucinations every thing passes in the brain, the activity of which is so great that the images recalled by the memory are endued with form and reality without the aid of the senses. "In illusions, on the contrary, the sensibility of the nervous extremities is excited, the senses are active, and actual impressions produce the reaction of the brain. This reaction being under the influence of the ideas and passions which govern the insane, they are deceived as to the nature and cause of their actual sensations. Illusions are not uncommon in a state of health; but reason dissipates them." The illusions of the insane may arise either from the internal or external senses. In illustration of the above M. Esquirol details several very interesting cases, for which we must refer to the work itself. The following are his conclusions.

"*1st,* That illusions are caused by internal and external sensations.

"*2d,* That they are the result of the sentient extremities, and of the reaction of the nervous centre.

"*3d,* That they are as often caused by the excitement of the internal as by that of the external senses.

"*4th,* That they cannot be confounded with hallucinations (visions) since in the latter cases the brain only is excited.

"*5th,* That illusions lead the judgment astray respecting the nature and cause of the impressions actually received, and urge the insane to acts dangerous to themselves and others.

"*6th,* That sex, education, profession, and habits, by modifying the reaction of the brain, modify also the character of the illusions.

"*7th,* That illusions assume the character of the passions and of the ideas which govern the insane.

"*8th,* That reason dissipates the illusions of the man of sound mind, whilst it is not powerful enough to destroy those of the insane."—Pp. 26, 27.

The second paper, the subject of which is of more practical importance, was presented to the Institute, 1st October 1832, and published in the *Annales d'Hygiene,* &c. As the hallucinations and illusions of insane patients frequently hurry them into the commission of acts which would be criminal if committed by persons in the enjoyment of reason, it is necessary, both for their own sakes and for the security of those surrounding them, that they should be deprived of their rights as free agents so long as they are subject to their unhappy malady. Now the question is, what it is that justifies the suspension of the rights of an individual? and in this respect the laws of all countries are defective, perhaps necessarily so. All legislatures have lodged in the magistrates the power of arresting such of the insane as disturb the general tranquillity; but this seems to be for the preservation of order, and not for the security of the person and fortune of the patient. In Great Britain this is left entirely to the family or nearest of kin of the insane, who by an application to the Lord Chancellor in England, or to the Sheriff of the county in Scotland, supported by the necessary medical evidence, may deprive him both of the management of his property and of his personal liberty. But these public officers do not, and in fact cannot, exercise any power over the subsequent treatment of an insane patient, unless it be to see that a certain portion of his property is set aside for his maintenance, and that the rest is not dissipated by mismanagement, neglect, or actual fraud. If this, however, be attended to, the patient may be placed in any licensed asylum, and be subjected to treatment the most opposite to that calculated to insure his recovery, provided, at the stated visits of the commissioners, nothing can be detected contrary to the act of Parliament. Now it is easy to see that it is not for the interest, and must be contrary to the wish of the unprincipled relatives of an unfortunate lunatic, that he should ever recover; and hence, so far as the law is concerned, they may, and probably will, select for his retreat a place of all others the worst calculated to produce any amendment. We know for a fact, that the care of the insane is occasionally undertaken by individuals, whose deplorable ignorance of the human mind totally disqualifies them for the due government even of their own children; and we have seen the condition of the unhappy patient rendered infinitely worse by unfeeling treatment, and more frequently by injudicious management. Did our limits permit, we could mention instances; but this is perhaps unnecessary, as every physician in active practice must have met with many. These remarks apply to what are called private mad-houses, and by no means to the public hospitals, or such establishments as the Retreat at York, maintained by the Society of Friends, in all or at least most of which we have opportunities of knowing that matters are placed on an excellent footing. We have not alluded to the interest which the keepers of private houses for the reception of the insane have in retarding, or at least not accelerating, the cure of those confided to their care, as this must be obvious to any one who reflects for one moment on the subject.

We do not wish it to be understood that we include in one sweeping sentence of condemnation all private establishments for the reception of the insane. Our object is simply to show the great probability there is of their being converted into sources of evil; and that this is their tendency so long as they may be licensed without any regard to the qualifications of the superintendent, will hardly be denied after the mass of evidence that has been collected on the subject by the House of Lords. The subject, however, is too important to be discussed incidentally in a notice of this kind. We shall take an early opportunity of stating at length our views on this and some other kindred topics.

There are two kinds of restraint to which insane patients are subjected. The one consists in confining the patient at home, depriving him of the administration of his fortune, and forcing him to submit to the regimen and treatment which may be deemed best adapted to his case. The second, which is the *isolation* or *sequestration* of the French, is much more complete. The patient is withdrawn from all his habits, removed from his home, separated from his family, friends, and domestics, surrounded with strangers, and forced to change his manner of living. Now the object of confinement being first to prevent the patient from injuring himself and others, and next to modify his understanding and affections by removing all those objects with which morbid ideas might be associated, it is clear that the first plan fulfils the indications very imperfectly, while the second may be carried out to the uttermost.

> "The question of confinement is entwined with the dearest interests of man, considered as an invalid, and as a member of his family, and of society. Hence arises the importance of a disease which exposes him who is attacked by it to be separated from the dearest objects of his affections, to be contradicted in his wishes, and deprived of the exercise of his civil rights and of his liberty. Hence arises also the responsibility of the medical man who is called upon to pronounce whether an individual ought to be deprived of his natural rights."—Pp. 30, 31.

M. Esquirol first considers the question in a medical point of view, and then points out the restrictions under which it ought to be authorized by law. These questions are important. In France alone, there are 15,000 individuals deprived of their civil and political rights and liberty without legal authority.

We cannot follow M. Esquirol through all his reasonings supported by cases, by which he proves that the insane ought to be confined. We must therefore be content with stating his conclusions.

> "THE INSANE OUGHT TO BE CONFINED.—1. For their own security, for that of their families, and for the maintenance of public order.
>
> "2. To remove them from the influence of the external causes which have produced their disorder, and may be likely to protract it.
>
> "3. To overcome their resistance to curative means.
>
> "4. To submit (subject) them to a regimen appropriate to their situation. And,

"5. To make them resume their moral and intellectual habits." —P.71.

It does not follow, however, that confinement ought to be prescribed for all insane persons; "for if the delirium is partial or transitory; if it relates only to objects of indifference, and is unaccompanied with violent passions; if the patient has no aversion to his home, nor to the persons with whom he lives, and his delirium is independent of his domestic habits; if his real or imaginary causes of excitement are not to be found in the bosom of his family; if the fortune or life of the patient or of his friends are not compromised, and he submits to the proper means of cure; in all these cases confinement may be useful, but it is not indispensable. If the patient, retaining a large proportion of his intellect, has a great attachment to his relations, it is to be feared that confinement might aggravate the disease."—Pp. 73, 74.

On the contrary, confinement is necessary in *mania*, *monomania* when the patient is actuated by pride, love, or jealousy; in *lypemania* when there is a tendency to commit suicide; in fatuity when the presence of the patient might injure others. Though there is no hope that idiots will be improved by confinement, it is nevertheless necessary to preserve them from accidents, ill usage, and from being made the instruments of the wicked for criminal purposes. As a general rule the insane poor ought to be confined, because otherwise they have little chance of receiving the necessary attention. Confinement ought to be tried in all cases where the patient has been treated unsuccessfully for a longer or shorter period at home.

How long confinement ought to be continued is a question very difficult to solve. It is ascertained, however, that more patients have suffered from being dismissed too soon than from being detained longer than necessary, and in these circumstances the practitioner, when there is any doubt, can have no difficulty as to the course most prudent to pursue. Indeed, from all that we have seen, we are convinced, that if the patient be in reality restored to his reason, his being detained for a month or six weeks longer, under the pretext of improving his bodily health, in order that he may appear perfectly well among his friends, will have no bad effect upon him, provided he be treated like a rational being, and separated from those who have not wholly recovered their senses.

We have now briefly noticed the more interesting parts of this volume. The conclusion of the second paper has a reference to the law of France; but there are several remarks which are applicable to the state of matters in this country, for which, however, we cannot make room.

Before concluding, we would call the attention of our readers to a class of cases, which, though of daily occurrence, and productive of most serious evils both to the unfortunate objects and their relations, seem to be looked upon rather as instances of vice than of disease. We allude to habitual drunkards, individuals subject to periodical fits of an unconquerable desire for ardent spirits, &c.

Now though we are not prepared to say that such unfortunate beings ought to be confined in an asylum, it does appear to us that it would be extremely desirable that there should be certain houses of refuge to which they might be sent. It is quite unavailing to propose moral restraint in these cases, especially in those of periodical fits of drinking. We have known instances of men of strong and well-cultivated minds, who, when not under the fit, lived most abstemious lives, being in fact perfect water-drinkers; but who, twice or three times in the year, would indulge for perhaps one, two, or even three days in intoxicating liquors to an extent hardly equalled by the veriest sot. The moment, however, that they were saturated they would return at once to their usual pursuits, perhaps with renewed vigour, and loathe intoxicating liquors till the fit returned. Since many of these individuals are perfectly aware of this fit coming on them, and take such measures as they have in their power to avoid exposure, we cannot help thinking that their being transferred at the commencement of the attack to a house of refuge would cut the fit short, and prevent a repetition of it. Be that as it may in respect to the class just mentioned, habitual drunkards can be looked upon merely as insane; and, though the insanity be so far voluntary, it is but right that their relations and the public should be protected against their evil acts. The law makes no allowance for intoxication either in criminal or civil cases, except in the latter, if it can be proved that the person profiting by the act of the intoxicated party was the cause of the intoxication. This is quite correct, in as much as it would put an end to all security, if a person might commit with impunity, provided he first got drunk, an act which he would not dare to do if sober. But the case is different when a man is notoriously an habitual drunkard; and though it may be expedient that he be held responsible for his acts till he be interdicted, we conceive that it would be but just to his family, and necessary for the security of the public, to vest the right of interdiction in some of the constituted legal authorities. We have no doubt that the very knowledge of such a power being in existence would operate beneficially on many.

This opinion of ours is neither new nor impracticable. In the state of New York the law places the property and person of an habitual drunkard under the care of the Chancellor, and the overseers of the poor may at any time call upon that officer to exercise his power. If the person consider himself aggrieved, his case may be investigated by six freeholders, the declaration of whose opinion is held to be *prima facie* evidence. There is at least one case on record in England, where a commission of lunacy was supported against an individual who when sober was a very sensible man, but, being generally intoxicated, was incapable of managing his affairs.

Besides habitual and periodical drunkards there are others who would be fit objects for reception into a house of refuge, which we cannot particularize here. We shall, however, take an early opportunity of discussing the whole subject at large.

In conclusion we beg to state that Mr Liddell has performed an important service in introducing in an English dress to the notice of British practitioners, the interesting papers of which we have just given an account, and which, but for his industry, might have failed to attract the attention which they deserve.

Art. VII.—*A Series of Twenty Plates, illustrating the Causes of Displacement in the Various Fractures of the Bones of the Extremities.* By G. W. Hind, Member of the R. C. S. L. formerly House-Surgeon to the Middlesex Hospital, &c. &c. London, 1835. Large 4to. Pp. 48.

These lithographic engravings are exceedingly excellent illustrations of the causes of displacement in the most important varieties of fracture incident to the bones of the extremities.

It is well known to the anatomical surgeon that these causes depend chiefly on the action of the various muscles; and that, according as the fracture is situate, in relation to the insertion of some of the principal muscles attached to the bone, will be the position of the fragments in relation to each other, and in relation to the limb generally.

An important problem in the pathology of fractures thus arises;—namely, to determine, in any given case of fracture, the situation, direction, and extent of which is specified, what ought to be the position of the fragments; and, conversely, the nature and degree of displacement of any fractured bone or bones being specified, to ascertain what is the situation, direction, and extent of the fracture.

There is no doubt that it is perfectly possible, from correct anatomical considerations, to determine theoretically the first proposition of the problem now enunciated; and if we cannot always determine the second question in the same manner, it is at least certain that we can understand these displacements by no other means, than by adverting carefully to the situation and direction of the fracture in relation to the muscles attached to, and operating on the two fragments. It is, indeed, the most instructive plan to combine both methods,—to keep our anatomical facts in constant alliance with those afforded by the phenomena presented by the occurrence of actual fractures.

This may give some idea of the duty undertaken by Mr Hind, who gives views of the displacements which have occurred in actual fractures in the bones of the living body, and still under the influence of the muscles; and it is interesting to observe how completely the displacements represented in these figures accord with the conclusions which result from anatomical principles only.

The surgical student, however, is not left to the information communicated by the figures, for understanding the various displacements and their causes; but Mr Hind has explained with much attention and perspicuity the anatomical and mechanical causes of displacement. In conclusion, we recommend this work very strongly to the attention of our surgical readers, as one of great utility, and without which, it is scarcely possible to practise their profession satisfactorily.

ART. VIII.—*Principles and Illustrations of Morbid Anatomy, adapted to the Elements of* M. ANDRAL, *and to the Cyclopedia of Practical Medicine, being a complete Series of Coloured Lithographic Drawings from originals by the Author; with Descriptions and summary allusions to Cases, Symptoms, Treatment, &c. Designed to constitute an Appendix to Works on the Practice of Physic, and to facilitate the Study of Morbid Anatomy, in connection with Symptoms.* By J. HOPE, M. D. F. R. S. Physician to the St Mary-le-Bonne Infirmary, &c. London, 1834. Large 8vo. 254 Lithographic Engravings.

WE have already had occasion to point out the advantages resulting from the use of delineations in communicating and acquiring a knowledge of the facts and principles of Morbid Anatomy. It is manifest that in all instances in which the shape or configuration of organs is much changed, where their intimate structure is palpably altered, and where manifest change of their colour has taken place, it becomes in some degree necessary, in order to communicate correct notions of the nature and extent of these changes, to have recourse to the pencil of the artist and the assistance of faithful colouring. The necessity of this method of proceeding is still more forcibly felt by the pathologist when he wishes to retain accurate and faithful records of morbid changes not often observed, and where he is anxious to employ many different forms, and individual examples of morbid changes in order to establish general principles, and obviate the chance of fallacy from written descriptions alone. In this manner delineations of morbid parts facilitate at once the task of the teacher in communicating, and the labour of the pupil in acquiring the requisite knowledge.

It is chiefly with these views that Dr Hope has published the work before us. To illustrate the great leading principles of morbid anatomy, and to explain the effects of morbid action in the various textures of the human body, he has here collected a well-chosen series of representations of the most frequent and important lesions found upon dissection.

In the arrangement of these representations Dr Hope informs us, that he follows that of the organs. But as we do not perceive very clearly the particular mode of arrangement of the organs adopted by the author, we shall mention shortly the actual method followed.

Beginning with the Diseases of the respiratory organs, Dr Hope distinguishes them into two divisions,—the first those of the Pulmonic *Parenchyma* or substance; the second those of the Air-passages embracing bronchial inflammation.

These subjects occupy the first eight delineations in a series of fifty-three figures.

The Diseases of the Heart are illustrated in the next division, consisting of twenty-one figures in four engravings.

To these succeeds a third division of the work, devoted to Diseases of the Liver, subdivided into two parts, the first consisting of diseases of the Hepatic *Parenchyma*, and the second the affections of the Biliary Apparatus. This extensive and complicated subject is illustrated in four engravings, presenting forty-eight figures of various forms of diseased structure.

A fourth general division is that of the Diseases of the Alimentary Canal below the Diaphragm. To the illustration of this complicated department, with the Diseases of the *Peritoneum*, Dr Hope has devoted twelve plates, consisting of fifty-eight different figures.

The Diseases of the Female Organs of Generation are next illustrated under the three heads of Diseases of the Ovaries, Diseases of the Womb, and Diseases of the Fallopian Tubes. Of these subjects the author delineates fourteen examples.

The representations of the morbid states incident to the organs now mentioned are followed by those devoted to the illustration of the diseases of the kidneys and bladder, and those of the spleen.

In the last division of the work we find the delineations of the principal morbid states incident to the brain and spinal chord.

Such is a view of the method of arrangement adopted by Dr Hope in the present work. We cannot pretend to say that we understand very clearly the mutual relations of its different parts or the general spirit of the whole; and upon this part of the work, therefore, we shall offer no opinion. It is requisite, nevertheless, that we make a few observations upon the manner in which Dr Hope has performed the task he has undertaken.

The examples of morbid actions and changes of structure are, upon the whole, well selected. They are in general well-marked or exquisite specimens of the diseases illustrated; and their physical and optical characters, so far as colour and shading go, are faithfully represented. It is true that in many examples we recognize what is called high-colouring, and in others we find some stiffness of outline, for instance, in the delineations of inflammation of the cerebral membranes; and in some of the figures illustrating the diseases of the stomach and those of the kidneys. But we have seen so many varieties of these degrees of colouring, and we are so well aware of the difficulties of representing them with accuracy, that here there is no just ground for blame; and it must be allowed, we do not propose to make any. In short, when we consider the extent of this work, and the great number and variety of the objects illustrated by the graphic powers of the pencil, we think there is every ground for commendation, and many for thanks to Dr Hope for his perseverance and industry in presenting so useful a work to the profession.

In some parts we observe a larger proportion of illustrative figures than in others. Thus, the diseases of the lungs and heart have naturally occupied a large proportion of the figures of the present work. Those of the liver and stomach and intestinal canal have also engrossed a considerable part of the work. Those on the morbid changes incident to the brain and spinal chord, though less numerous, afford a fair view of the most usual and important lesions of that part of the human frame.

In the descriptive details, Dr Hope has studied principally to refer to the work of M. Andral, and the pathological department of the Cyclopedia of Practical Medicine. Though this circumstance may seem to render the work rather an illustrative commentary upon these treatises, the explanations are sufficiently full and minute to make it intelligible by itself.

In conclusion, this work is well calculated to serve as a guide to the student in the study of the effects of morbid action, and must be also highly useful to the country practitioner, whose opportunities for preserving and increasing his knowledge of morbid anatomy are necessarily limited.

ART. IX.—*Outlines of Comparative Anatomy.* By ROBERT E. GRANT, M. D., F. R. S. E., &c. Professor of Comparative Anatomy and Zoology in the University of London, and Lecturer on Human Physiology.

Part First, containing Osteology, Ligaments, and Muscles, illustrated with 65 *Wood-cuts.*

Part Second, containing the Muscular and Nervous Systems, illustrated with 32 *Wood-cuts,* Pp. 244.

THOUGH we rarely attempt to notice any work in the course of publication only, we think it is proper to direct the attention of the English student to the present, as one calculated, by its philosophical method and elementary character, to supply a great chasm in the literature of the Comparative Anatomy of this country.

Excepting, indeed, the short, and rather in some respects meager, though very accurate compendium of our revered teacher, Mr Fyfe, the English language possesses no original work on comparative anatomy. The voluminous and expensive publication of the late Sir Everard Home, though containing much interesting and instructive matter, we must regard not as a system, but as a series of essays on different subjects in zootomy,—all a great deal too diffuse and prolix for giving the student a succinct and connected view of the facts of comparative anatomy, and the laws of organization to be established thereon.

In attempting to supply the defect now mentioned, therefore, it is impossible to doubt that Dr Grant will render a most important and acceptable service to the student of animal anatomy and physiology. His general method is to begin with the structure in those classes which are conceived to be simplest and therefore lowest in the scale, and to proceed progressively to those in which the organization indicates a greater degree of complexity and refinement, and consequently formation according to a more elevated type.

The two parts now before us contain the outlines of the anatomical historyof the osteology, the desmology, the myology, and the neurology of the animal kingdom in four separate chapters.

In the first chapter, which is devoted to the anatomy of the skeleton, the osseous system or the organs of support, Dr Grant treats successively of this part of the animal frame, 1*st*, in the Radiated or Cyclo-Neurose Classes; 2*d*, in the Articulated or Diplo-Neurose Classes; 3*d*, in the Molluscous or Cyclo-Gangliated; and 4*th*, and lastly, in the different divisions of the Vertebrated Classes. This chapter is necessarily lengthened;

and the author gives a minute and accurate, as well as a philosophical view, of the various forms which the organs of support and protection present in the various tribes of the animal kingdom.

In a shorter chapter, Dr Grant gives a general view of the organic means by which the component parts of the skeleton are connected to each other so as to form a general mass.

From the organs of support, the passive instruments of motion and protection, the author next proceeds to the examination of the muscles, the active agents of motion. As the possession of organs of this description is one of the great characteristics of animal life, and as they assume great varieties of form in the different tribes of the animal kingdom, the author devotes a larger space to the anatomical history of these organs. In this part of his subject he observes the same order as in treating of the bones,—explaining first the anatomy of the muscles in the lowest and most simple forms of animal existence, as the Radiated and Articulated Classes, and proceeding by the Molluscous to the examination of the muscular system in the different orders of the Vertebrated Classes.

The Nervous System is the next, the possession of which peculiarly distinguishes the actions of animals; and the anatomical history of this naturally follows that of the muscles. After a few preliminary observations on the structure and physical characters of the nervous system in general, Dr Grant proceeds to consider the various forms under which this system appears in the different classes of the animal kingdom.

In this exposition, which forms the subject of the fourth chapter, the author observes the same order as in treating of the skeleton and muscles; beginning with the animals of the most simple construction, viz. the Radiated and Articulated, and proceeding upwards to the Vertebrated classes.

Without entering into a detailed examination of the manner in which the author explains his subject, we may say in general that Dr Grant, so far as we can judge from the present specimen, promises to be successful in preparing a useful and instructive guide to the student of zootomy. In a subject so extensive the great difficulty is to select those facts which may serve to illustrate and impress general principles; and in doing this, it is nevertheless necessary not to be so general as to sacrifice all detail, communicate loose or erroneous ideas, and render the work useless as a didactic treatise. Two evils are thus in the composition of such a work to be carefully avoided; the one of tedious and unprofitable minuteness, the other of brief obscurity and vague and unintelligible general descriptions. Both extremes, we think, are hitherto well avoided; and we trust that Dr Grant will in the subsequent course of his work observe the same happy medium.

The wood-cuts, which are very accurate and beautiful, afford great assistance in rendering the descriptive details intelligible.

ART. X.—1. *Osservazioni Antropo-Zootomico-Fisiologiche di* BARTOLOMEO PANIZZA, P. O. di Notomia Umana, nell' J. R. Università di Pavia. Pavia, 1830. Small folio, with ten Copperplates. *Anthropo-Zootomico-Physiological Observations.* By BARTHOLOMEW PANIZZA, Professor of Human Anatomy in the Imperial University of Pavia.

2. *Sopra il Systema Linfatico dei Rettili, Richerche Zootomiche di* BART. PANIZZA, &c. Pavia, 1833. Large folio, with six Copperplates. *Zootomical Researches on the Lymphatic System of Reptiles.* By BARTHOLOMEW PANIZZA, &c.

WE have for some time been desirous to lay before our readers a summary of the very valuable information contained in the above-mentioned works of Professor Panizza. The last of them is entirely occupied with the description of the Lymphatic System of Reptiles; the first consists, in great part, of observations on the Lymphatic System of Man and Warm-blooded Animals, but it also contains an account of original observations by the author on some other subjects.* It is our intention, upon the present occasion, to confine ourselves to those parts of Professor Panizza's investigations which relate to the Lymphatic System of Man and Animals.

It might be supposed that the patient researches and accurate dissections of Monro, Meckel, Hewson, Mascagni, and the various other anatomists who pursued this path of inquiry with so much success during the last century, had left comparatively little to be done in this department of anatomy: But the necessity of a more accurate knowledge of the structure and distribution of the lymphatics that has been experienced by those who have of late been engaged in the investigation of the functions of these vessels, has again attracted attention to the subject, and has called forth several very valuable memoirs.† Among these the works of Fohmann and Panizza unquestionably hold the highest place.

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* This work consists of six chapters. The first relates to the structure of the penis in various animals; the second to the structure of the lymphatic vessels in the male organs of reproduction; the third, fourth, and fifth to the discussion of various points in the anatomy and physiology of the lymphatic system of man and animals; and the sixth to the structure of the skin and mucous membrane.

† The following may be mentioned as some of the more important.

1. The essay by Tiedemann and Gmelin on the manner in which substances pass

Those of Panizza, with which we are at present more immediately concerned, form one of the best specimens of minute anatomical research with which we are acquainted; they exhibit a profound knowledge on the part of the author of what had previously been ascertained respecting his subject, a clear appreciation of the points requiring farther elucidation, and great skill in conducting the laborious and delicate operations necessary in an investigation of this kind. They contain many observations entirely new, and of considerable importance, both in an anatomical and physiological point of view; and it is no small recommendation of these works that they are illustrated by the most beautiful plates, designed and engraved in the best style.

There is perhaps no subject which illustrates more clearly the dependence of sound physiological views, upon a correct knowledge of anatomical structure, than the one at present under consideration; for it may be affirmed that many of the deductions hitherto made with regard to the function of absorption have been rendered imperfect, and some of them quite erroneous, merely from ignorance of the exact course and distribution of the absorbent vessels.

The more important topics connected with the anatomy of the absorbent system, upon which information is at present desirable, and to which the attention of Professor Panizza has been directed in the works before us, seem to be the following. 1. The mode in which the lacteal or lymphatic vessels commence or take their origin from the different textures of animals; the structure of the smallest absorbent vessels and their connection with the blood-vessels and parenchyma of different organs and textures, including the question, whether the minute lymphatics spring from or give rise to capillary blood-vessels? 2. The relation of the lymphatic absorbents to the excretory ducts of glands proper, as the kidney, testicle, &c. 3. The question, whether the larger lymphatic or lacteal vessels inosculate directly with the larger blood-vessels, and more especially with the veins? 4. The structure of the lymphatic glands, particularly in reference to the communications alleged to exist between the lymphatic vessels and the veins in the interior of these glands.

1. The manner in which the smaller lymphatic and lacteal absorbent vessels take their origin in the substance of different textures, or upon the surface of serous and mucous membranes, is

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into the Blood from the Stomach and Intestine. Heidelberg, 1820. 2. The essay by Fohmann on the communications of the lymphatic vessels with the veins, Heidelberg, 1821; and his admirable work on the Lymphatic System of Fishes, Heidelberg, 1827. 3. The memoir of Lauth of Strasburg on the Lymphatic System of Birds, published in 1824. 4. The Physiological and Pathological Illustrations of the Lymphatic System by Sign. Lippi, which appeared at Florence in 1825. 5. Various shorter memoirs on different departments of the subject, by Rosenthal, Rossi, Antomarchi, Magendie, and others.

a subject which has baffled the skill of the most dexterous anatomists, from the time of the first discovery of these vessels to the present day, and we find accordingly the greatest diversity of opinion prevailing regarding it. By some the lymphatics are considered as mere continuations of the minute arteries, and are supposed to receive directly from them the lymph which they carry back to the heart. By others the lymphatics are held to communicate freely at their origin with the capillary veins; while a third set of experimenters deny the existence of any direct inosculation between the capillary blood-vessels and the absorbents, and describe the lymphatics as beginning by open mouths in all parts of the body, more particularly in the cellular texture pervading all the organs, and in cells conjectured by some to exist between the arteries and veins. This opinion is supposed to derive especial support from the manner in which the lacteals commence on the inner surface of the intestinal canal,—from the cellular appearance often produced when the lymphatics of the mucous membranes are finely injected with mercury,—and from the mode of origin of lymphatics on the surfaces of serous membranes.

From the most recent and accurate researches, and more especially from those of Panizza, we have good reason to reject all these opinions as unworthy of credit, and to conclude, that, so far at least as the distal extremities of the absorbent vessels are concerned, these vessels are to be considered as a system independent of the blood-vessels and neighbouring textures, having no visible openings of communication with them, but originating by a minute net-work of vessels, the meshes of which everywhere communicate and are interwoven with one another.

The opinion, that the lacteals take their origin by open extremities on the internal surface of the intestinal mucous membrane, and particularly from the *villi* on that surface, has, from its affording a ready explanation of some of the phenomena of the absorption of the chyle, found a considerable number of advocates, who have adduced physiological experiments as well as direct anatomical observations in its support. Lieberkuhn, Hunter, Hewson, Cruikshank, Hedwig, and Bleuland describe the lacteals as opening through the villi into the intestine, or at least they state that the *villi* are provided with visible pores, which they supposed to constitute the apertures of lacteal vessels. Most observers indeed admit, that, at the root of, and in the neighbourhood of the villi, (and more especially of those which are filled with chyle,) small lacteal vessels appear very distinctly during the process of absorption of the chyle, but there is still great doubt as to whether these vessels have open mouths in the villi; Rudolphi and Alb. Meckel, after a very careful examination of the villi, deny the existence of pores in them, and state that the appearance of pores probably arises from certain depressions existing on their surfaces. Müller, in his late work on physiology, (Vol. i. p. 256,) maintains that the inner membrane of the intestinal canal is everywhere perforated with close-set small holes, but he is in doubt whether these ought to be regarded as the openings of the lacteals, or rather of mucous glands. In the injections of the intestinal lacteals by Panizza, and these are, we believe, inferior in minuteness to none that have ever been executed, he has demonstrated the existence of several layers of the smaller lacteal vessels superimposed on one another. But although many of these mercurial injections were made in animals, such as reptiles, in which there are very few valves, and in which consequently the injection could be made from the trunks towards the smaller vessels, none of the mercury found an issue into the intestine: and this corresponds with the experiments previously performed by Fohmann and others, in which various fluids injected into the lymphatics with considerable pressure could not be forced through the mucous membranes. It might be thought that the passage of bland fluids from the cavity of the intestine into the lacteal vessels, affords a certain proof of the open state of the extremities of the lacteals: but, from the facility with which the mucous membrane is ruptured, it seems impossible to form any conclusion not liable to objections from experiments made in this way. Professor Müller, in his excellent work on Physiology, above referred to, (p. 251,) states, that when we take a part of the small gut of an animal immediately after it is killed, as of the sheep for instance, with the mesentery attached, and throw warm milk into the gut, the lacteals are very soon completely filled with the milk, just as if they had been injected by means of a syringe,—a fact we have ourselves frequently confirmed by repetition. Were we to look no farther, we might be inclined to believe in the free passage of the milk from the cavity of the gut into the lacteals by the absorbent orifices, but when we examine the mucous membrane of the gut minutely, we find that membrane ruptured in various places: and from the rapidity of the filling of the lacteals, there can be little doubt that the milk or other fluid found its way into them through these lacerations.

In like manner, the passage of air or mercury from cellular texture into the lymphatic vessels is no proof of their extremities being open in the natural condition, because they are most probably broken during the extension of the cellular texture by the injected matter.

It may be remarked in fine, that it is in those injections of the lacteal vessels especially in which the mercury or other injected matter has run in the finest manner, such as those of Mascagni and Panizza, that no orifices of these vessels are to be discovered. From all these circumstances, we seem entitled to conclude with these authors, that neither the lymphatic nor lacteal vessels have any open mouths on the surfaces of membranes, or in the substance of the textures.

The opinions that at one time prevailed respecting the various modes in which the arteries terminate have of late been much modified by the more accurate knowledge of the minute blood-vessels, which has followed the modern improvements of the microscope, and the adoption of better methods of investigation. Many of the first anatomists now hold the opinion, that the arteries have no other known or visible terminations in the greater number of the textures of the body, than directly in the commencing veins, or in the capillary vessels situated between the arterial and venous systems. The whole array of secretory, transpiratory, and exhalent vessels, formerly considered as dependences of the minute arteries, has now been discarded, or at least gives place very generally to the opinion, that the various matters separated from the blood in the processes of exhalation and secretion are not transmitted through visible tubes destined solely for that purpose, but pass by transudation through invisible pores in the coats of the small blood-vessels.

A vague belief in some kind of continuity of the blood-vessels and lymphatics has still, however, very generally prevailed, as well probably on account of alleged direct observations by anatomists of the passage of injected fluids from one set of these vessels to another, as from the circumstance that the connection supposed to exist between the minute extremities of the lymphatics and blood-vessels seemed to afford a kind of explanation, however unsatisfactory, of various physiological facts connected with the absorption of lymph and the moulding of the form of the body. It is well known to anatomists that fluids holding different colouring matters in solution may be made to pass from the arteries into the veins, and also into the lymphatics; but when the lymphatics have been thus filled with these fluids, it is obvious, that a general transudation of the injected matter has occurred, because the whole of the cellular texture and the cavities of the body are at the same time impregnated with the injected matter. When again such an injection as size, holding an insoluble colouring matter, (vermilion, for example,) suspended in it, has been used, we find that the vermilion generally remains in the blood-vessels, while the glue transudes through their coats, and fills the cavities of the body, the cellular and other loose textures and the lymphatic vessels, and if, as more rarely happens, the lymphatics should also contain vermilion, obvious extravasation of the matter used for injection generally proves that rupture of the blood-vessels has occurred. We may mention among the older authors who supported the view above alluded to from their observations, Nuck, Berger, Cowper, Lister, and Bartholin, who assert that they have made injected matter pass from the splenic artery,—Morgagni and Cowper from the Splenic Veins,—Nuck and Cowper from the spermatic and renal veins,—and Tyson and Cowper from the mesenteric artery into the absorbent vessels.

More recently Lippi has asserted the existence of direct inosculations of the smaller blood-vessels and absorbents in considerable numbers; but neither the description nor representations which he has given of them are likely to prove convincing to anatomists accustomed to this kind of research.

We may also mention here a modification of this theory, recently published in a lecture on the functions of the lymphatic system, by Dr Graves, of Dublin, a second edition of which appeared in 1834. In this essay, Dr Graves supports the view, that in such textures of the body as cartilage, ligament, tendon, serous membrane, the cornea, &c. or the white textures, there are no proper veins to convey the blood from the arteries back to the heart, but that this office is performed solely by the lymphatic vessels, which must be considered according to the hypothesis as continuous with the arteries. The red textures only, such as the muscles, he conceives, are supplied with proper veins. The lymphatics or veins of the white textures, according to him, are not of such a size as to admit the red particles of the blood, but transmit its fluid portion only, which he erroneously conceives to be of the nature of serum, forgetting that the *liquor sanguinis* holds dissolved in it the whole of the fibrine of the blood. In order to refute this hypothesis, which is opposed by many of the best ascertained facts in anatomy, it is merely necessary to mention, that while the lymphatics of many of the white textures have not yet been demonstrated, their arteries, more expecially in young animals, may easily be filled with size or turpentine and vermilion injection, in which case the returning vessels from these arteries are also filled, and these returning vessels do not lead into the absorbents, but are obviously part of the ordinary venous system. Dr Graves has supported this hypothesis by a reference to Avertebrated animals, the whole of the bodies of which he conceives to be of a similar nature with the white textures of the vertebrata, and the veins of which animals, as conveying only white blood, are, according to him, to be regarded rather as lymphatics than as veins. It would occur to us that for the same reason, the arteries of Avertebrata ought not to be considered as such; and we would farther remark that some of the Avertebrata are composed of red textures, some have red blood, others yellow, and that in the white blood even of most of the others, there are distinct globules which return to the heart by the vessels hitherto called veins.

On the other hand, the names of W. Hunter, Monro, Hewson, J. F. Meckel and Mascagni, are among those who dispute the existence of any such communications as those above alluded to between the absorbent vessels and the sanguiferous system. The experiments and observations of Panizza afford the most satisfactory proof of the correctness of the view adopted by the last mentioned anatomists. He has injected various kinds of fluids, holding different colouring matters in solution or suspension, severally into the arteries, veins, and absorbent vessels, and he has never observed any of these fluids to pass directly from either kind of blood-vessels into the absorbents, or *vice versa*, unless there was at the same time extravasation and consequently rupture of their coats. He observes that in those parts of the lymphatic system which are capable of being most minutely injected, such as those upon the genital organs, male or female, the liver, spleen, or the intestine, (the uterus of the cow and rabbit, the spleen of the herbivora and intestine of the turtle, being those considered by him as best adapted for the experiment,) the smaller lymphatics form a net-work, the meshes of which everywhere communicate with one another, but are nowhere interrupted, nor end by open extremities. These experiments were very often repeated, and were performed on a variety of animals. Those performed upon man, the horse, dog, sow, rabbit, goat, otter, and some other mammiferous animals, are described in the first of the works before us.

In the second and more recent work, is contained an account of similar experiments performed on various reptiles, as the turtle, lizard, crocodile, snake and Batrachia, and the scrupulous care and attention with which these injections and dissections were performed, as well as the uniformity of the results with which they were attended, leave no room to doubt the accuracy of the conclusion deduced from them by the author, viz. that the smaller absorbent vessels are anatomically distinct from the smaller blood-vessels. The observations of Professor Panizza also show (what had been previously brought forward in opposition to the opinion of the continuity of the lymphatics and blood-vessels,) that the smallest of the lymphatics that can be filled in anatomical injections are at least ten times larger than the capillary blood-vessels; the greater number of the minute absorbents being generally twice that size, and there being no reason for believing that any smaller exist.*

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* It is scarcely necessary to remark, that these observations by Professor Panizza, in reference to the capillary vessels, apply with equal force to those small lympha-

2. We shall next advert in a very few words to the opinion that the absorbent vessels occasionally arise from, or are connected near their origin, with the excretory ducts of glands. This opinion appeared to receive countenance from the circumstance, that the absorbent vessels of secreting glands have been observed not unfrequently to be filled with the secreted products of the parts from which they proceed, and was supported by the alleged observation of the passage of injected matters from the ducts of glands into the absorbent vessels; in the liver, kidney, mamma, and testicle. The difference of size, however, of the terminations of the excretory ducts of glands and the smaller lymphatics makes it extremely improbable that these two kinds of vessels are continuous with one another, and the observations of Panizza and others give us every reason to believe that the appearance of such communications is owing entirely to the rupture of the coats of the different kinds of vessels situated contiguously to one another.

Lippi states that he has once or twice observed some of the chyliferous vessels in the region of the loins to lead directly into the pelvis of the kidney after passing through lumbar glands, and he considers these as "Urinifero-Chylopoietic Vessels" capable of transmitting digested matters immediately from the intestines to the urine. But Panizza could never, in reiterated injections performed with the greatest care, and to a much greater degree of minuteness than those of Lippi, find any lacteal vessel leading into the excretory canal of the kidney, and, however convenient the belief in the existence of such vessels might be for the physiologist in his difficulty of accounting for the very rapid transmission of some substances from the alimentary canal to the kidneys, anatomical evidence forbids us at present to admit it.

3. We shall now enter shortly into the consideration of another of the questions connected with this subject which has engaged the attention of Professor Panizza, viz. whether any connection by inosculation subsists between the absorbent vessels, and the blood-vessels in the lymphatic glands. The intimate structure of the lymphatic glands is a subject, it must be confessed, upon which the observations of anatomists are not as yet satisfactory. It is well-known that Malpighi, Nuck, and Cruikshank conceived the inferent vessels to pass into cells within the glands, from which the efferent vessels as suddenly arose, while Hewson, Meckel, and Mascagni held that the inferent

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tic vessels which have been supposed to run through a very short course, and then to terminate in veins, so as to constitute absorbing roots for the veins. There seems to be every reason to believe that the veins of themselves imbibe fluids, and that the superaddition of short lymphatics to them is entirely hypothetical.

vessels of the lymphatic glands are connected with the efferent vessels by a multitude of intermediate twigs formed by the gradually increasing subdivision of the inferent and efferent trunks. In some animals, no doubt, the intermediate absorbent vessels of the glands are not smaller than the parent inferent and efferent trunks, and it occasionally happens, as in the Cetacea, that they are even somewhat larger, so that when the glands are cut across the divided portions of the vessels present a cellular appearance; but anatomists are now very generally disposed to adopt the view first suggested by Hewson, and to regard the absorbent vessels in the interior of the lymphatic glands as not of a cellular nature, more than the tube of the *vesiculæ seminales*, the veins of the spermatic cord or of the *corpus spongiosum urethræ*, or the arteries in such textures as the *rete mirabile* of ruminating animals.

The interchange of matters supposed to take place, during the absorption of the chyle, between the contents of the lacteals and blood-vessels, together with the remarkable subdivision undergone by the lacteals, and the large quantity of blood-vessels distributed in the glands, led at an early period to the belief in the existence of openings of communication between the two kinds of vessels at this part of the chyliferous system, and the ready passage of substances from the absorbents to the veins, observed by the greater number of anatomists to occur not only in injections of the mesenteric glands, but also of the other lymphatic glands of the body, greatly confirmed the opinion that the two kind of vessels open into one another in the interior of the glands at least, if not in various other parts of the body.

Modern discoveries regarding the processes of organic transudation, however, have tended to make us reject the necessity of visible openings of communication between contiguous vessels, in order that fluids should be enabled to pass from one to the other, and some anatomists are inclined, from the result of their injections of the lymphatic glands, to deny the existence of any natural openings in their interior.

Before proceeding to relate the results obtained by Professor Panizza respecting this important point it may be remarked, that, in many of the examples of alleged passage of mercury from the lymphatics into veins within the glands, a pressure greater than that usually employed to inject the lymphatics was necessary in order to propel the mercury into the veins. Thus in J. F. Meckel's observations, he states, that after the lymphatics of the inferior extremity had been filled with mercury by the pressure of a column of that fluid eighteen inches high, and none of the mercury passed into the veins, he pressed along the injected vessel with his finger, and then only it was that the mercury entered the veins. Mascagni and Hewson did the same, and hold that it is only when such additional pressure is used, or when rupture and extravasation has occurred, that the veins are filled. In other instances, again, the glands have been obviously in a diseased condition, and their efferent ducts in all probability obstructed by foreign matter.

The experiments which appear to be strongest in favour of the communication of absorbent vessels and veins within the glands, are those of Fohmann, related in the first of his works, referred to at page 511. Fohmann performed these experiments while he was prosector to Tiedemann, and under his direction, and we believe that most of Fohmann's conclusions received the sanction of the learned professor of Heidelberg. After an enlightened examination of the observations of those who had gone before him, Fohmann concludes from his own experiments, that with the pressure usually employed for filling the absorbent vessels, and in animals soon after death, the mercury very often passes from the lymphatics into the veins, the communication occurring in the interior of the lymphatic glands,—that this takes place in many instances without extravasation of the mercury, and consequently, according to him, without rupture,—and that there is, therefore, direct *inosculation* of the veins and lymphatics.

Among other arguments in favour of a regular and easy communication between the absorbent vessels and veins in the lymphatic glands, Fohmann adduced the statement, that the *pancreas Asellii*, or mass of united mesenteric glands is in some animals (the seal and the dog) unprovided with any efferent vessels, and he supposed the whole of the chyle to pass into the sanguiferous system in these animals by the mesenteric veins of the glands. Very soon after the publication of Fohmann's essay, however, Rosenthal, and afterwards Rudolphi at Berlin, demonstrated the existence of the efferent vessels belonging to the *pancreas Asellii* in the seal, and their connection with the thoracic duct; and since his time, the same fact, which had never been doubted before Fohmann, has been several times demonstrated both on the seal and dog. From this great error on the part of Fohmann, many have been inclined to reject all his arguments in favour of the communication of the lacteals and veins; and, as the evidence on both sides of this question seems nearly of equal force, we trust it will not be considered superfluous to relate the observations made by Panizza respecting it, as they are more complete than any others with which we are acquainted.

According to this author, mercury and other injected fluids thrown into the lymphatic vessels pass easily into the veins in most Mammiferous animals: there is, however, considerable difference with respect to the facility with which this takes place, according to the kinds of animals operated on, and the parts of the absorbent system which is injected. Thus in man, the dog, horse, calf, sow, otter and goat, mercury injected into the chyliferous vessels passes readily into the veins of the mesenteric glands, but the veins of the inguinal or axillary glands are very rarely filled in injecting the lymphatic vessels of the extremities. According as the passage of the mercury into the veins is more or less easy in the different kinds of animals, the veins or the efferent vessels of the glands are first filled: Thus in the dog, in which of all the animals on which he experimented, Panizza found the veins most easily filled, out of one hundred experiments, there were only two or three instances in which the mercury appeared in the efferent vessels before it had entered the veins, and in general the efferent vessels could not be filled until the veins were tied. In the rabbit and marmot again, Panizza very rarely observed the filling of the veins with mercury, while the lymphatics of the gland and the efferent vessels were perfectly well injected. In the human body, in the dog, and rabbit, extravasation of the mercury in the glands was not unfrequently observed, but the veins were not always filled when extravasation occurred, and in the sow the veins of the glands were readily filled, although the whole of the minute lymphatics of the glands were accurately injected, and there was not the slightest appearance of extravasation of the mercury.

Panizza farther remarks, that, if the filling of the veins in these experiments depended on rupture, we might expect to find the arteries as well as the veins injected with mercury, and he is therefore inclined to hold the opinion that some sort of communication, independent of rupture, must exist between the lymphatics and blood-vessels in the glands, but he confesses himself unable to explain the nature of this communication; he suggests that it may consist of small pores through the coats of the vessels which are contiguous to one another, and between which there is probably no interposed cellular texture.

While we regard these experiments of Panizza as highly valuable, since they fully demonstrate the frequent *passage* of injection from the lymphatics into the veins within the glands, we do not feel inclined to go so far as he has done in concluding, that they prove the existence of sensible pores, still less the direct inosculations supposed by Fohmann; for it has been shown that rupture may easily occur, to prove the existence of which, it is by no means necessary that extravasation should always be present.* It frequently happens also, that the lacteals and mesenteric glands are gorged with chyle, and that before death the thoracic duct has even been burst from accidental pressure on it, or from the application of a ligature to it, without chyle being perceived in the veins. It must also be recollected, that many of these injections are made some time after death, when considerable alteration may have taken place in the structure of the parts, and that in general the transition of the mercury is greatly facilitated by the weakening of the textures consequent on putrefaction.

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* We would recommend the perusal of the remarks upon this subject, by Professor Weber of Leipzig, in his edition of Hildebrand's Anatomy, Vol. iii. and by Professor Muller, in his Physiology, Part 1st.

4. Regarding then the minute or commencing absorbents as wholly distinct from the blood-vessels, and the alleged communications between them, in the interior of the lymphatic glands, in some animals as doubtful, and in others at least as of a very indirect and obscure nature, we proceed, in the last place, to consider what are the more obvious points of junction through which the contents of the absorbents, or the lymph and chyle, are poured into the sanguiferous system, by the direct inosculation of larger lymphatic trunks with larger veins. The observations of Panizza on this subject are particularly valuable, from their being performed on a variety of animals. It may be stated generally, that, from the result of former and more recent researches in man and quadrupeds, the only obvious points of junction between the absorbent and sanguiferous systems (excepting always those suspected in the glands as already stated) are two in number, well known to anatomists, viz. one between the principal thoracic duct, and the left subclavian or jugular veins, the other between the vessel, generally called the right lymphatic trunk, and the similar veins on the right side of the neck.

It is now fully ascertained by the researches of Panizza, that the larger absorbents and veins do not in mammiferous animals inosculate at any other place, and that the larger absorbent vessels appearing to join venous trunks, described by many of the older authors, and more particularly insisted upon and figured by Lippi, are not really lymphatics or lacteal vessels, but veins, into which the injected matter used in the dissections has passed from the absorbent vessels within the glands.* This opinion, which was held by Meckel and Mascagni, is proved in the most satisfactory manner by Panizza to be correct. He regards the sudden origin of these vessels from the glands, their thick coats, want of valves, simple cylindrical appearance, and straight course, as convincing evidence that they are merely veins from the glands, and not efferent vessels.

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* In 1826, Sign. Rossi published an essay on the communications between the absorbents and the veins, in which the above fact was mentioned; Rossi assisted Professor Panizza in 1824, when it was first demonstrated, and afterwards himself confirmed Panizza's observations at Parma.

Professor Panizza also states that he has never observed the direct inosculation of an inferent vessel with any of the veins, and, as we have the high authority of Fohmann in support of the same opinion, it may now be considered as ascertained, that in general the absorbent and sanguiferous systems of Mammalia do not join by any large vessels, excepting those alluded to, as being well known to exist at the veins of the neck.

Abnormal distributions of the thoracic duct, or branches proceeding from it, have, however, been occasionally observed: these must form exceptions to the above general law, as must also the fact pointed out by Panizza, that in the sow the thoracic duct pours its contents by a number of small cross branches into the *vena axygos*.

We shall next advert to some of the more recent researches of anatomists respecting the Lymphatic System of Birds.

From the observations of Magendie, Lauth, and Fohmann (made upon the turkey, common fowl, heron, stork, swan, wild and tame goose, duck, bittern, and buzzard,) together with the previous researches of Hewson and Monro, we learn that the lymphatic vessels of birds have much fewer valves than those of Mammalia, and that the valves are so loose, that the vessels may sometimes be injected from the trunks towards the smaller ramifications. Their coats are very thin and easily ruptured. The aquatic birds offer the most favourable opportunity of investigating the structure of the lymphatic vessels, because the absorbents of the posterior extremities are larger and more easily found than those of other birds. There are very few lymphatic glands in birds, a few in the neck; the place of the abdominal and inguinal glands is supplied by minute plexuses of lymphatic vessels which surround the trunks of the principal arteries and veins.

Besides the two openings of communication between the main lymphatic trunks and the veins of the neck on each side, Tiedemann and Fohmann, Lauth and Lippi state, that the lymphatic vessels of the posterior part of the body open directly into the sacral, renal, and pelvic plexuses of veins, and, according to Lauth, the communications between the two classes of vessels are even still more numerous. He says at p. 388 of the third volume of the Annal. des Scien. Natur. "On remarque constamment dans les grands plexus du tronc des rameaux souvent assez considérables qui se versent dans les veines sanguines voisines," but in his plates he has represented only one or two communications with the sacral and pelvic veins.

Panizza in repeating these observations on various birds, and particularly on the goose, satisfied himself that there are not in birds frequent inosculations of the lymphatics and veins; but that they are confined to two places in the posterior region of the body, at which the junction of the larger lymphatics with the veins is equally constant with those already alluded to in the neck. At the posterior region of the body on each side, in the angle between the tail and the thigh, the principal lymphatic vessels of the inferior extremity join with those of the pelvis, and form a remarkable dilated vesicle: These vesicles are joined by branches of the lesser mesenteric veins, leading into the great renal veins. These vesicles in the goose are a little more than half an inch long, and a quarter of an inch thick, being shaped somewhat like a kidney bean. Panizza laid them bare in several living geese and punctured them, upon which the lymph issued in considerable quantity, and jellied like the lymph from ordinary lymphatics. Fluids thrown into the lymphatics leading to the vesicles, not only filled these cavities, but passed through them into the veins, and Professor Panizza observed in the living goose, that the blood in several veins communicating with the vesicles had the appearance of being diluted by the continual admixture of lymph with it.

It now only remains for us to relate the highly interesting additions to our knowledge of the lymphatic system of reptiles, made by Professor Panizza in the last of the works before us, which constitutes a complete monography on that subject. These observations were made upon the following reptiles: *Testudo Caouana*, *Crocodilus lucius*, *Lacerta viridis*, *Python* or *Boa Amethystina*, *Coluber flavescens*, and *C. natrix*, *Salamandra terrestris*, and *Rana esculenta.*

One of the most important facts established by Professor Panizza is the prodigious extent of the lymphatic system, compared to that of the blood-vessels, in this class of animals,—a circumstance which he supposes must occasion a very slow motion of the lymph and chyle, and may, by allowing sufficient time for the elaboration of these fluids, compensate for the want of glands, by which in quadrupeds that process is supposed to be effected.

On most of the textures of reptiles, but more especially on their internal organs, the net-work formed by the lymphatic vessels is of an astonishing minuteness, so that on the surface of the intestinal canal, oviducts, bladder, and some other parts, when the injection has been successful, nothing but successive layers of minute lymphatics is to be seen. The reservoirs or principal trunks, including the receptaculum and thoracic ducts into which the lesser lymphatic vessels are collected, are of such size, that a person unacquainted with them would, upon first seeing them filled with mercury, conclude that that fluid had burst from the lymphatics and passed into the serous cavities, or into the spaces between the mesentery. In some reptiles, it may be mentioned, the thoracic ducts, of which there are always two diverging upwards from the receptaculum, are twice the size of the intestinal canal. These receptacles, in fact, are placed, like the sinuses of the *dura mater*, in contact with the peritoneum or mesentery, and the uniformity of their structure in repeated injections of the same animal and in different kinds of reptiles, as well as the observation of lymph in these cavities in the living animals, or in one recently killed, leave no doubt that they are the principal lymphatic trunks into which all the smaller lymphatic vessels pour their contents. According to Professor Panizza, the greatest number of lymphatic vessels belonging to the intestinal tube is not upon the stomach and small intestine, where *a priori* we should suppose them most required for the absorption of digested matter, but at the two extremities of the alimentary canal, as on the œsophagus, rectum, and cloaca,—a circumstance which, according to him, points out more extended views of the functions of these vessels, than have hitherto been entertained regarding them. The comparatively small number of lymphatics observed by this author to be distributed on the spleen and liver is unfavourable to the theory advanced by Tiedemann and Gmelin, that these viscera supply in the class of reptiles the place of lymphatic glands.

In reptiles all the lymphatics of the body terminate in the receptaculum and thoracic ducts, (with exceptions immediately to be mentioned,) and the lymph passes from the thoracic duct on each side of the body into the anterior *venæ cavæ*, or brachiocephalic veins, by means of small fissures provided with valves fitted to prevent the reflux of the fluid from the veins to the lymphatics.

The thoracic ducts of most reptiles are not, however, as in quadrupeds, the only direct means of passage from the lymphatic into the venous systems. Professor Panizza has demonstrated the new and interesting fact, that in most of the reptiles, the lymphatics belonging to the posterior part of the body open into the pelvic veins, in a manner similar to what he had described in birds in 1830, and he farther states, that in all those reptiles in which the pelvic communications exist, the parts of the lymphatic trunks where they join the veins are, as in birds, dilated into vesicles of considerable size, communicating both with the lymphatics and the veins. Professor Panizza also made the remarkable observation, that these vesicles are endowed with a power of contraction and dilatation independent of the heart or arteries, and are thus the means of propelling their contents into the venous system; a discovery in which, as regards the publication at least, without being aware of it, he had been anticipated by about a year by Professor Müller.*

The pelvic lymphatic vesicles were observed by Müller in the living frog, toad, salamander, and green lizard. Panizza has seen them in the frog, the snake, and the lizard, but was unable to detect them in the salamander. In the turtle, of which Panizza dissected fourteen specimens, there being no communication of the pelvic lymphatics and veins, there are also no lymphatic vesicles. In the crocodile, Panizza makes no mention of these vesicles. In the frog, according to both Müller and Panizza, besides the lymphatic vesicles or hearts already mentioned, similar to those of other reptiles, there are two others which have not as yet been observed in any other animal, situated below the scapulæ, and forming the means of communication in that region between lymphatics and veins. These vesicles undergo regular alternate contractions and dilatations like the heart, and their motions are wholly independent of the organs of circulation and respiration, for they are not synchronous with the beats of the heart, and they continue for some time after the animal has been divided into two parts, or the portion of the body in which they are situated has been separated from the rest. The limits of this review do not permit us to describe these interesting organs more at length, and we must refer those of our readers who are desirous to obtain farther information to the Memoir of Müller in the Philos. Trans. for 1833, page 89, and to the work of Panizza, page 29. We would only farther remark in relation to this subject, that it appears from more recent observations by Müller, (see Archiv. fur Physiol. &c. 1834, page 300,) that the pelvic lymphatic vesicles of birds are not endowed with a power of motion like that belonging to those of reptiles, he having satisfied himself, by repeated examinations of the living goose, that the alternate contraction and dilatation of these vesicles in this animal, which Panizza conceived to depend on an automatic power within them, corresponds exactly with the motions of respiration, and no longer continues when they are interrupted.

From these observations, then, it follows, that in the four classes of reptiles there are two symmetrical junctions of the thoracic ducts with the brachio-cephalic veins. In the turtle these are the only ones which exist; while in the crocodile, lizard, boa, coluber, and salamander, there are, besides these, two other openings of communication between the lymphatics of the posterior parts of the body and the pelvic veins: and that in the frog, in addition to these four, there are two others in the region of the scapulæ.

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* The existence of pulsating dilated parts of the lymphatic system was first noticed, by Müller in a paper published in Poggendorff's Annalen, September 1832. A detailed account of these organs in the frog, lizard, and salamander, was afterwards presented to the Royal Society of London, by Müller, in February 1833. Panizza's work did not appear until near the end of the same year.

It may be mentioned that several observers had previously noticed the pulsation of two of these vesicles at the back of the thigh in the common frog, and were quite at a loss to explain its cause.

Panizza has shown by a series of the most careful experiments that the lymphatic and sanguiferous systems do not in reptiles communicate at any other places than those already mentioned. These experiments, it may be remarked, are performed in reptiles under the most advantageous circumstances, on account of the absence in those animals both of numerous valves in the lymphatic vessels and of lymphatic glands. In making the finest injections of all parts of the lymphatic or sanguiferous system with size or mercury, he never observed a single instance of passage of the injected fluid from one of these systems to the other, unless obvious rupture of the coats of the vessels and extravasation had at the same time occurred.

Professor Panizza has not detected any power of contraction in the large receptaculum or wide thoracic ducts of reptiles, although he admits that such a power may exist. He supposes, however, the motion of the chyle in these organs to be very much assisted by the large blood-vessels in their neighbourhood, and by the alternate contraction and dilatation of the thorax in respiration.

Allen Thomson, M. D.

PART III.

MEDICAL INTELLIGENCE.

PATHOLOGY.

Observations on Atrophy of the Brain, generalized from authentic Cases. By the EDITOR.—Under this name M. Piorry, M. Gueneau de Mussy, M. Bell, and M. St Ives have recorded cases in which the characteristic constituent matter of the brain disappears, while in its place is found a quantity more or less considerable of serous fluid. As the anatomical characters of the lesion aré not very distinctly given, the best plan is to give a short abstract of the cases which have been hitherto recorded.

1. In the case first described as an example of this change, M. Piorry states, that the only trace of the right hemisphere was a thin membranous fold containing fluid; at the bottom of which were found the *optic thalamus* and *corpus striatum*, both atrophied, evidently indurated, grating under the scalpel, and no longer presenting the alternate arrangement of white and gray fibres, by which these parts are usually distinguished.

It is in the report of this case rather an oversight, that the author does not specify more distinctly the physical characters of atrophy. From the collateral circumstances, however, it may be inferred, that in atrophy the parts are shrunk, compressed, and somewhat disorganized.* The atrophy appears to have been the consequence of the abundant effusion of serous fluid, which distended the whole right hemisphere, and probably compressed the parts situate at the base of the organ, for instance the optic chamber, and striated body, the *tubercula quadrigemina*, the optic and olfactory nerves, and the olivary and pyramidal bodies of the right side. This case occurred in a man of 27, who was born hemiplegic on the left side.

2. *Case of Atrophy of the Cerebral Hemisphere.* By M. GUENEAU DE MUSSY. (*Archives Générales*, Tome xxii. p. 416. 1830.)—The symptoms in this case were hemiplegy of the right side, incomplete atrophy and emaciation of the palsied extremities; the intellect and senses were unimpaired. The individual was a man of 42, who came into the Hotel Dieu with evident symptoms of disease of the heart, and died in two days.

Appearances.—Infiltration of the lower extremities, especially on the right side, and fluid was effused into the serous cavities. The left ventricle of the heart was three or four times larger than natural, and its walls were very thick. The right ventricle was depressed and diminished.

The skull on the left side was twice the thickness of that on the right. The brain on the left side presented a considerable depression; and the anterior lobe of this side was exceeded by half an inch anteriorly by the anterior lobe of the right side. The convolutions were attenuated, flattened, more consistent and whiter than natural, and the interposed *sulci* were broad and deep. The lateral ventricle contained a considerable quantity of effused fluid, was very much dilated, and its walls were very thin. The *optic thalamus*, the *corpus striatum*, the annular protuberance, and the anterior peduncle on the left side were atrophied. The cerebellum presented a similar alteration on the right hemisphere, which was a third smaller than the left.

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* Journal de Physiologie Experimentale et Pathologique, Tome ix. p. 53.

On this point M. Amussat states, that he has always observed that the *cerebellum* presents on the side opposite to that of the depressed cerebral hemisphere, a similar atrophy. The same fact was affirmed by M. Ferrus, that generally the patients were idiots. In one case, however, as in that of M. Gueneau de Mussy, the senses and intellect were entire.

3. *Atrophy of one lobe of the brain in an epileptic; imperfect palsy of the opposite side, continuance of the intellectual and sensorial faculties.* By Mr Bell, Internal Pupil at the Salpetriere. (*Rev. Med. Bullet. de la Societe Anatom.*, May 1831; *Archives Gén.* Tome xxvi. June 1831.)—Marg. L., 61 years, was epileptic from birth, and suffered numerous accessions. She stated, that towards the age of five or six years she underwent a long and very severe disease, in consequence of which she lost the use of the arm and leg of the left side. The fore-arm and hand were in a state of forcible flexion, while the leg continued only in slight flexion. The epileptic fits increased neither in frequency nor in intensity. At the age of about fourteen menstruation was established without improving the condition of the patient. At the age of forty she was admitted into the Salpetriere, and from that time she presented invariably the following symptoms.

Average vigour and corpulence; all the functions were duly performed; the sensitive apparatus was equally impressible on both sides, and a good degree of intelligence. The left superior extremity was retracted. The motions of the scapulo-humeral articulation of this side were less extensive than in the natural state, particularly in elevation of the arm; the fore-arm was forcibly and immoveably inflected on the arm, and the hand upon the fore-arm; the metacarpo-phalangeal articulations in a state of flexion, and the phalanges extended. These articulations, however, admitted of limited motion from before backwards, altogether voluntary. In other respects each part of the limb appeared to equal in volume that of the opposite side. Sensibility was as much developed as on the right side, except in the hand, which, probably from want of habit, did not appreciate so well as the other the shape and size of objects.

The lower extremity was in a state of semi-flexion, and admitted of voluntary flexion of the thigh or the *pelvis*. The femoro-tibial articulation was in a state of immoveable semi-flexion, with the foot half-extended, so that the patient walked on tiptoe, yet could not raise it from the ground without difficulty, and dragged it over the ground.

About the close of February 1831, she was attacked with symptoms of pleuro-pneumony, which were opposed by general and local blood-lettings, and tartarized antimony in the large dose, but without avail, death taking place on the sixth day.

Upon inspection, besides the alterations proper to pleuro-pneumony, and concentric hypertrophy of the left ventricle, the head presented the following appearances.

The scull-cap was readily separated from the *dura mater*, which on the left side was sound, on the right presented at the parietal region a large ossification, which extended by means of smaller patches to the frontal region, and thus inclosed the corresponding cerebral hemisphere in a second osseous case almost complete, in which were mingled by mutual adhesion the deep layer of the *dura mater* and the arachnoid membrane. The *falx major* presented also several osseous points. The cerebral arachnoid membrane was of an opaline white, traversed by fibrous points. The arachnoid and the *pia mater* appeared injected and much thickened. The right lobe of the brain was nearly a half smaller than the left; and presented numerous very small convolutions, especially at its inner region. The lateral ventricle was much dilated, and contained a great deal of fluid. The optic *thalamus* was atrophied, and its prominences were obliterated. The *corpus striatum* appeared in good state in the anterior third; but the posterior part was rough and furrowed. The other parts of the ventricle were equally diminished in volume. The cerebral substance was scarcely a few lines thick in the greater part of its extent, especially the inner and upper region. (No mention is made of its consistence or aspect.)

The left hemisphere, covered with sound membranes, well developed in all its parts, was a little more consistent than natural. The lateral ventricle was small, and all its parts were well marked. The thickness of the cerebral substance was considerable, and its convolutions were large and numerous.

The *mesocephalon* was small from before backwards, and appeared truncated particularly before. The median *septum* and its ventricle were pushed to the left. The posterior right pillar of the fornix formed a smaller curvature than the left. The third ventricle was irregular, the left optic *thalamus* being much more distinct than the right. The common aperture of this ventricle with the lateral was longer on the right side than on the left. The anterior and posterior commissures were slender and very soft.

The left lobe of the *cerebellum* was flattened and manifestly diminished in volume. The left anterior pyramid appeared also a little less developed than that on the opposite side. The spinal marrow presented no difference in volume in its two halves. The external vessels of the spinal *dura mater* were loaded with blood.

The structure of the cranial bones was somewhat altered. The right frontal portion was almost double the thickness of the left, and the whole right side of the cranium was in general thicker than the left. The right superior orbital *fossa* was more elevated, and the middle temporal *fossa* consequently deeper,—offering many inequalities and fissures. The sphenoidal fissure was deformed. The right anterior clinoid process was more forward, causing the optic nerve of this side to appear a little longer. The eminences of the petrous part of the temporal bone were more marked. The *crista galli*, as also the internal occipital protuberance and the occipital spine were thrust to the right, so as to give the cranial cavity a twisted appearance. The lateral diameter of the right side was a third less than that of the left, even supposing the bones of the same thickness on both sides.

In the two members affected, the osseous system was well developed; the deformed articulations were almost void of synovia, excepting those of the shoulder and thigh; the muscles were flattened and diminished in size; the *triceps brachii* alone was pale and fatty; but the vascular and nervous trunks appeared as large as those of the sound side. The cellular adipose tissue was more abundant on the diseased side, and appeared to supply the atrophy of the muscles.

A case in almost every circumstance similar to this was presented to the Anatomical Society by M. Bedey.

4. *Atrophy of the Anterior Lobes of the Brain, Scirrhus of the Uterus and Ovaries; Idiocy and Nymphomania.* By M. Silvestri, Physician to the Royal Hospital of Insane at Palermo. (*Archives Generales*, August 1834, p. 618. Vol. xxxiii).—A young girl of Contessa, a Greek colony in Sicily, of sanguine temperament, and regular stature, made no intellectual progress after the age of two years, and was never able to learn to speak. Led only by the instinctive feeling of hunger, she frequented those places where she expected to find food; and though she preferred alimentary articles offered by charitable persons, if she met with absolute filth, she took it, and seemed to swallow it with pleasure. In this manner she lived till she attained the age of 12, when she was admitted into the Royal Insane Hospital, and where, being clothed and well fed, her health was completely restored. When alone, she continued to seek filthy articles, and immediate-

ly swallowed them. Her intellect underwent no change; her countenance indicated the simplicity of a child; her senses were not quite perfect, she gazed without appearing to fix on any object. Though she did not speak, it appeared that she heard; for when called by name she immediately turned in the direction whence the sound proceeded. Taste was perverted; and though she smelled what she was going to eat, she nevertheless swallowed the most disgusting substances. Among the internal sensations that of hunger was the most excitable; its impressions were regular, but its perceptions very imperfect. The faculty of speech she could scarcely be said to possess.

All persons of any authority that she saw within the Establisment, she denominated in general *Baruni*, employing the name she had heard a thousand times applied to the director. Once only when shut in her chamber, she addressed to this functionary as he was passing the words *Baruni pani*, but since that time she never repeated the second word. Her memory was so imperfect that she was never able to retain more than two words. On very rare occasions she uttered some Greek word. She gave no sign either of anger or friendship. She had an irresistible propensity to masturbation, and by repeating this practice she could introduce into the *vagina* the hand and part of the fore-arm, when a bloody fluid issued from the parts. Whatever care was taken to prevent this depraved act, she chose moments to indulge in it; and if by means of the strait-waistcoat, she was prevented from using the hands, she studied to approach any hard body, and placing it in contact with the *vulva*, she tore herself till the blood came. In this manner she lived a considerable time, became then pale and much emaciated, was attacked with fever, which never left her, and she died at about the age of 15.

Inspection of the body disclosed the following appearances.

Extreme emaciation; the *mammae* not developed; and the regions of the trochanter and *coccyx* occupied by sores, the effect of the long-continued pressure in these parts.

Upon opening the *cranium* a small quantity of bloddy serum escaped. The anterior lobes of the brain were a little flattened, especially the right one, which was a half smaller than the left. The upper part of each of these lobes, close to the interlobular fissure, was hollowed by a cavity; the left, which was most extensive, was about one inch in diameter and eight lines in depth; and it was evident that the surface of these cavities was formed by convolutions, which were atrophied to such a degree that they did not exceed a line and a half in breadth. At the lower part of the anterior right lobe was a third depression similar to the first. The *pia mater* and arachnoid membrane were injected, and could not be separated from the atrophied convolutions without detaching at the same time the cerebral substance. After removing the atrophied convolutions, and ascertaining that they consisted of hard and changed cortical or gray matter, there was found beneath not white matter, but a dense close substance of a yellowish colour, of extent equal to that of the depressions, and about three lines deep. This yellowish colour was most distinct in the left lobe, and the substance so changed was surrounded by small calcareous concretions imbedded in a soft grayish sort of matter. The yellow substance presented no trace of organization. The other parts of the brain were natural in shape, volume, colour, consistence, and structure.

The ossification of the skull presented several irregularities, the most remarkable of which was the great thickness of the frontal protuberances, that of the right side being not less than six lines,—and the direction of the small right wing of the sphenoid bone, which rose much, and rendered the cerebral *fossa* of that side smaller than the other.

In the chest was nothing but adhesions of the *pleura*.

The liver, spleen, and the mesenteric glands were enlarged.

The ovaries were three times their usual size, very hard and scirrhous. The womb, which was double its usual size, presented many hard bodies like diseased *ovaries* in their physical properties; but showed no trace of organization, and was converted into a whitish soft tissue. The neck was dilated to four or five lines in diameter. The mucous membrane of the vagina was injected, and its lower half was occupied by many small white eminences as hard as cartilage.

5. *Atrophy of the whole right hemisphere of the Brain, with induration of the anterior lobe of the same side; Atrophy with induration of the left lobe of the cerebellum.* By M. St Ives, Internal Pupil at the Salpetriere. (*Archives Gen.* January 1835. Tome. vii. 2. ser. ou Tome. xxxv. p. 96.) Margaret Cl. whose mother was terrified three months before being delivered by an accident, which she witnessed in the street, was attacked shortly after both with epileptic convulsions, which returned daily in different degrees of violence. At the age of 3 or 4 she presented great feebleness of the muscles of the left side, with rigidity of the muscles of the fore-arm. At 5 or 6 she passed though small-pox and had no convulsions.

To the age of 12 or 13 the accessions recurred at more distant intervals. Previous to and at the period of the appearance of the *catamenia*, they became more frequent and longer in duration, and the palsy of the left side and rigidity of the left arm were complete.

At the age of 15, when she was admitted into the division of the Salpetriere allotted to epileptics, the menstruation was regular, she was 4 feet 7 inches high, the complexion good, the chest little developed, the corpulence moderate.

The epileptic accessions were most frequent at the periods of menstruation; and in the intervals she was often eight days without any other symptom except giddiness. The members of the palsied side were evidently atrophied.

The intellect was developed; the memory correct; she was conscious of her state, was extremely desirous to be delivered from it, and was fond of medicine. She was grateful and pious, but irascible and headstrong.

She remained in the division of the epileptics for twelve years, during which the fits of epilepsy and giddiness were more frequent, intellect and fortitude decayed, she had fits of anger, and gradually delirium following each attack.

Transferred to the division of the incurables, she remained there three years, during which the remains of intelligence and other good qualities were entirely extinguished, and she sunk at last into a complete state of fatuity (*dementia*), with daily attacks of epilepsy, and fury followed by deep collapse or accessions of stupid merriment, the epilepsy disappeared, and the patient, who now presented all the symptoms of scurvy, died on the 10th of August 1834, aged 30 years.

The body was emaciated and infiltrated, particularly in the face and extremities.

There were pleuritic adhesions, especially on the left side, the *pericardium* was distended with much serous fluid. The mucous membrane of the alimentary canal presented ecchymotic spots, variable in extent and number, from the stomach to the rectum.

The *cranium* was deficient in symmetry, the left side of the parietal arch being more convex. The bones were thick but soft and spongy in texture. The *dura mater* was thick. The subarachnoid filamentous tissue was loaded with much serous fluid especially on the right side. The vessels of the *pia mater* were feebly injected.

The brain stripped of its investments presented the whole right hemisphere much smaller than the left, the convolutions smaller and completely obliterated at the posterior region; while the ventricle was exceedingly distended by serous fluid, the walls of the ventricle were very much attenuated, about one line or one line and a-half thick, the anterior lobe condensed and resembling caoutchouc, the *corpus striatum* and optic *thalamus* obliterated, with diminution of size of the left lobe of the *cerebellum*, and condensation of the surface.

The left lobe of the *cerebellum* was also much smaller than the right, and its density was similar to that of the anterior lobe of the right hemisphere, with this difference that it diminished from the circumference to the centre.

Each of the cerebellic plates resemble the fibre of a muscle which had undergone long boiling.

It is manifest that, in cases of this nature, the atrophy of the brain is not a primary or idiopathic lesion, but is indeed the effect partly of the excessive distension of the walls of the brain by an extraordinary quantity of fluid, and partly of mechanical compression by the fluid inducing sometimes condensation of the parts sometimes softening, but always more or less destruction of the proper structure. Atrophy, indeed, is one of the effects of great effusions of fluid. It cannot be denied that in cases of this class the brain is not nourished, or is even deprived of nourishment. But it must be borne in mind that the suspension or interruption of nutrition is the effect of a primary morbid state, in which the blood-vessels, the natural nutrients of the organ, are made to assume a new and perverted action.

From the cases now recorded it further appears that the atrophied parts of the brain are diminished in size or shrunk, and that they also cease to possess their characteristic physical and physiological properties, and to perform their functions duly. Thus in all the cases with the diminution in size of the parts, there is more or less loss of motion and sensation in some of the voluntary organs. Loss of memory appears occasionally to take place, but loss of intellect is not invariable. This, however, may depend on the part of the brain atrophied, and on the extent of the atrophy.

As to the intimate nature of the change induced in the parts so shrunk and diminished we have as yet no precise information. It may arise either from arrest of the growth of the parts, or from the removal of parts by absorption, or rather by disruption and breaking down. The pressure increased by the presence of a new fluid may be adequate to prevent growth of the parts compressed, and even to break down and disorganise.

Atrophy of the brain, therefore, may differ according as it takes place during the process of developement or after that process is completed. If it take place during the process of formation, then that process is suddenly interrupted, and the brain presents more or fewer of its parts in an incomplete or rudimentary state. Thus in cases in which the process is interrupted previous to the formation of the convolutions, and in which serous fluid more or less copious is effused from the nutrient vessels, the brain resembles a shapeless uniform bladder of membranous and cerebral matter enclosing serous fluid. This is perhaps the most complete example of the atrophy of the brain, and corresponds with the *agenesia* of M. Cazauvieilh (Archives de Med. xiv.)

The parts which next to these are most generally wanting are the meso-lobe, *fornix*, and *septum lucidum*. Reil observed the want of this part in an idiotic female who had attained the age of thirty years.

Independently or along with the meso-lobe and fornix, the upper region of the hemispheres may be wanting as far as the ceiling of the ventricles. But it is difficult to distinguish the atrophy of this part from atrophy of the convoluted surface of the brain.

Atrophy may next affect the *corpora striata* or optic *thalami*, in the form of diminished bulk and general dimensions, proceeding to such extent that these bodies may be altogether wanting.

The same lesion may occur in the cerebellum, the annular protuberance, or in the peduncles and the spinal bulb.

The spinal chord or vertebral portion of the brain is in like manner liable to atrophy, both during the process of developement and after its completion.

In the first case the chord is either entirely or partially wanting, and its place is supplied by serous fluid, more or less copious, contained within the membranes. Thus, in many cases of *spina bifida*, as it is denominated, that disease is the effect of some interruption given to the process of growth in the spinal marrow, by reason of which the arterial action is expended in the effusion of fluid, which fills and distends the membranes, prevents the further deposition of cerebral matter, and preventing also the union of the spinal plates on the mesial plane, gives rise to a soft elastic tumour at the most yielding and dependent part of the spinal column. In general the spinal marrow is either partially or entirely wanting in some part of its course in cases of this kind. Its continuity is interrupted either without a single trace, or with a few streaks of cerebral matter on the one side, or at the anterior part of the column, while the vacancy is supplied by serous fluid or shreds of cerebral matter.

In other instances of this species of atrophy, each lateral half of the chord is in a very slender and imperfect form of developement, and is separated from that of the opposite side by the interposition of serous fluid. In cases of this kind, it is not uncommon to find the median canal persistent long after birth, imitating in this respect the structure observed in the spinal chord of the lower animals.

It may be doubted whether it be quite correct to apply the term Atrophy to those lesions of the spinal chord, in which the breaking down, the softening or shrinking of the parts, is evidently due to inflammatory action excited in them from disease of the membranous investments or the bones. Thus, in cases of disease of the *vertebræ*, inflammation of a chronic character is very soon propagated to the membranes and the chord, and part of it is softened and disorganized. The injury may not be sufficient to extinguish life; and after some time, when the active part of the inflammatory process has subsided, part of the spinal marrow is contracted in size, and compressed by the new products; and this constitutes, according to the strict understanding of the term, the anatomical characters of atrophy. In admitting this application of the term, therefore, it ought to be distinctly understood, that the term atrophy designates, not a primary lesion, but a lesion which is the effect of another previous action. Several cases of the kind are recorded by Ollivier and others.

On sudden Death depending on a Spontaneous Lesion of the Lungs. By Dr Ollivier of Angers. (*Archives Generales*, Tome xxxi. February 1833. P. 228.)—The numerous examples of sudden death recorded by authors depend in general either on cerebral hemorrhage, or on rupture of the aorta or heart, or on the spontaneous laceration of an aneurism of these organs. Excluding these alterations, which are these most frequently found in the dead body, it is rare to meet with cases of sudden death depending on well-marked lesion of the lungs. Lancisi, indeed, and Morgagni, speak of deaths ensuing instantaneously by suffocation in the fits of hooping-cough. In other cases still more rare, death has taken place unexpectedly in persons in whom the heart and large vessels were found filled with an aeriform fluid developed spontaneously in the interior of these organs. The reality of this last mentioned circumstance as a cause of sudden death derives high probability from various facts recorded by M. Louis. But previous to its being admitted as a cause of sudden death in any given case, it is requisite to exclude all others, and especially that of which the following may be regarded as examples.

Case 1. *Sudden death produced by spontaneous emphysema of the lungs.*—Gamichon, a tanner of small stature but muscular, had been early affected with general rheumatic pains, the origin of which he ascribed to residence in a humid place, in which he had been brought up. Excepting the accessions of this disease, which were repeated pretty often, his health was habitually good, though from time to time he complained of restraint in breathing, and was short-breathed and quickly panted. He was also of a violent irascible temper, and the slightest opposition threw him into extreme agitation, which he could not control. On the evening of the 17th of August 1832, he quarrelled with his brother-in-law, who amidst the dispute struck him. Gamichon, much stronger than his antagonist, sprung forward to knock him down, but was withheld by various persons, who observed that his relative was evidently intoxicated. Obliged to stifle his passion, Gamichon dissembled the violent emotion he had shown, and taking the hand of his boy, went home, distant about 150 paces from the scene of the affray, and, exactly at his own door, fell down dead on his face. At the shrieks of his daughter two neighbours came and raised the body. The face was extremely pale, and covered with a profuse sweat. As the circumstances preceding this unexpected death tended to lead to the idea that it was the result of the blow, M. Ollivier was employed by the Procurator of the Crown to inspect the body the next day, viz. the 18th, at 2 P. M., when the following circumstances were recognised.

Well-marked cadaveric rigidity; no traces of external violence on the head or the rest of the body. Cadaveric patches on the posterior region of the trunk and extremities. The organs contained in the abdomen were quite sound, and presented no peculiar characters as to colour or injection of their vessels. The stomach contained a small quantity of red-wine, not a glassful, which the deceased had drank immediately before quarrelling with his brother-in-law.

The lungs, void of adhesion, were emphysematous in several points of their surface. They did not at all collapse when the chest was opened. Their texture, the density of which was remarkably increased, was so much expanded, that they raised the muscles of each intercostal space as if the chest had been too small to contain them. Each lung crepitated strongly, but in a different mode from the crepitation produced by a frothy fluid in the bronchial tubes. Little blood escaped from incisions made in their substance. The windpipe and the principal divisions of the bronchial tubes contained no frothy mucus.

The cavities of the heart contained blood, partly fluid partly coagulated. The thickness of the walls of the two ventricles was natural. There was no perceptible lesion of the aorta or large trunks, venous and arterial.

The brain and its membranes presented no remarkable injection. The consistence of the former was firm. The ventricles contained no serous fluid. There was nowhere any appearance of putrefaction.

M. Ollivier ascribes the sudden death of this individual to spontaneous *emphysema* of both lungs. Their elastic tension, the crepitation, accompanied with the peculiar chicking sound produced by the infiltration of air in tissues which it accidentally penetrates, left no doubt, he conceives, on the existence of this remarkable lesion proceeding from laceration of one or more ramifications, or of some bronchial vesicles. This rupture he further attributes to the influence of the violent efforts of inspiration, which took place rapidly during the paroxysm of wrath to which Gamichon gave way, exactly as in the convulsive state of the respiratory organs which takes place when we attempt to suppress a violent and painful emotion. Such a result, he adds, was more liable to take place in the person of a violent and passionate and robust individual, in whom the respiratory organs were the seat of permanent functional disorder.

The author makes some observations calculated to obviate any objections as to the circumstance of *emphysema* ensuing suddenly being the cause of this variety of sudden death. He omits, however, to observe that, in order that this notion be well founded, two conditions are indispensable, the one the sudden, nay, immediate supervention of *emphysema*, and the other the general diffusion of this lesion all over the pulmonic filamentous tissue. It might justly become a question whether air could so suddenly be effused into the whole filamentous tissue of the lung in cases of this kind as to cause immediate *asphyxia*.

Case 2. *Sudden death caused by pulmonary apoplexy.*—A person named Broonoel, aged 56 years, a mattress-maker, of very robust constitution, enjoying perfect health, and leading a sober regular life, had been forced to quit his abode, because he could not pay the rent. On the 11th of February 1833, he met in the street his landlord; and, though habitually calm, at seeing this person he became furious, and rushing forward to strike him, made some precipitate steps, became pale, staggered, and fell dead in the arms of the person whom he was threatening. The Procurator for the Crown having intrusted the inspection to M. Ollivier, to determine the cause of the sudden death, that gentleman inspected the body next day at nine in the morning in company with Dr Brugieres, and recognized the following circumstances.

Well-marked cadaveric rigidity; body strongly muscular; paleness of the countenance; no liquid, bloody or otherwise, issuing from the cavities of the nose or mouth; no marks of external violence on any part of the surface; superficial cadaveric patches at its posterior surface. A truss worn for an inguinal hernia on the left side had given way, doubtless at the moment of falling down dead. The hernial sac was empty.

The vessels of the integuments of the cranium, as also those of the membranes, were not particularly injected. The consistence of the brain was natural. The vessels distributed in its substance did not emit blood from numerous sections made in all directions in the cerebral lobes, the *cerebellum*, and the *medulla oblongata;* nor did these parts present any trace of effused blood. The ventricles contained only a small quantity of limpid serum. Dark-coloured fluid blood flowed from the vertebral cavity.

The pericardium contained a teaspoonful of reddish serum. The heart was voluminous. The walls of the left ventricle were very thick; but its cavity void of blood. The right ventricle contained a considerable quantity of very fluid blood, which was also found in the superior and inferior *venæ cavæ*. Nowhere were there traces of fibrinous clots. The aorta and its branches were free, and contain little liquid blood.

The left lung adhered almost entirely by old cellular bands to the costal *pleura*. The surface of the right lung was unattached. Both lungs of a violet colour, were less spongy at their anterior margin than in the natural state. Their substance emitted on percussion a dull sound; throughout their consistence and hardness were remarkable; and they were greatly heavier than natural.

The surface of each of the incisions made in their substance was granular, and of a very deep black red. The pulmonic tissue was so impregnated with blood, that it was scarcely possible to squeeze from them a frothy fluid. All the branches of the pulmonary veins and arteries were indicated by an equal number of black clots, more or less prominent, varying in size according to the character of the containing vessel. On scraping by the scalpel the surface of the incisions, a little dark clotted blood was removed. The inner wall of the bronchial tubes was of a deep red. This state of the pulmonic tissue existed in four-fifths of the whole of the left lung, and in two-thirds of the right lung. Near their posterior margin, where a residue of heat was still found, the blood contained in some of the larger vessels was still fluid, and escaped in a stream upon incision. At the surface of the right lung were observed several vesicles full of air, large transparent, each the size of a large cherry, raising the pulmonary *pleura*, as is observed in partial emphysema of the lung. The windpipe and bronchial tubes contained no blood or bloody mucus.

All the organs of the abdominal cavity were natural. There was no strangulation or contraction in the portion of intestine contained during life in the hernial sac, which was now empty.

M. Ollivier did not learn whether this person had experienced any constrained breathing; but at all events he never complained, and his son assured M. Ollivier that his father enjoyed habitual good health;—an inference which might be deduced from the perfect soundness of all the organs, from the plumpness of the deceased, and from the remarkable developement of the whole muscular system. He observes, however, that the partial *emphysema* noticed in the right lung, if it did not take place only at the instant when the blood burst into these organs, might lead to the supposition that Broonoel had some disease of the chest, or that he was subject to some oppression or difficulty in breathing. As to the cause which determined the pulmonary apoplexy, M. Ollivier ascribes it to the violent emotion into which the deceased was thrown at the sight of the individual to whom he ascribed his distress; and he thinks that the rapidity of the death was the cause of the want of hemorrhage by the nose and mouth,—which he thinks would have been profuse if life had continued some instants.

In these two cases of sudden death, M. Ollivier traces various points of analogy. Both individuals were of a robust constitution; in both the muscular system was well developed; both were in good health at the moment they were suddenly cut off; in both the sudden death ensued in a violent fit of anger; in both the cause of death was seated in the lungs; whatever difference may exist between the nature of the two lesions, so suddenly fatal in both cases, it is manifest that in both they were induced under the influence of violent, and in some sense convulsive efforts of the organs of respiration. And lastly, the paleness of the face at the moment of death, as also the distinct cadaveric rigidity at the time of inspection, are two common circumstances in which they agree.

M. Ollivier is further of opinion that the second case accords in several respects with a case of sudden death which had taken place in waltzing, recorded in the 22d volume of the *Archives*, January 1830, and of which the leading circumstances are the following.

Case 3. On Sunday the 13th December 1829, M. G., a student of law, was at a public ball where he waltzed vigorously for some time, when all at once he fell down, void of sense and motion. Remedies of various kinds were used, and a vein was opened; but without benefit. The gentleman was completely dead. It was learned that he had been previously in excellent health, and that he a little before made a copious meal. Thirty-six hours after death, the following appearances were recognised.

The body that of a man of from 18 to 20 years. Well marked rigidity. The muscular system was well developed, and the general appearance that of a vigorous constitution. The integuments, especially those of the lower extremities, were strongly congested; their colour being that of a high scarlet. Upon the chest and upper extremities this redness was in the shape of patches and disseminated in large sugillated marks. No blood issued from any of the natural openings. The expression of the countenance was little changed.

The vessels of the membranes of the brain were gorged with blood, which nestled under the knife. The cerebral substance was sounded through the whole hemispheres. The ventricles contained about two spoonfuls of slightly tawny serous fluid. The branches of the origin of the veins which pass through the *tela choroidea* at least double the usual volume. The *cerebellum*, annular protuberance, and spinal bulb, were, as well as the brain, dotted with blood, but not otherwise altered. Nowhere was there particular congestion or circumscribed effusion. Much blood issued from the vertebral canal. The spinal marrow was not examined.

Upon removing the walls of the chest, the lungs did not collapse. They were void of adhesions. Their colour was generally livid. When compressed, they did not crepitate, but communicated the sensation of a mass of cotton, which is massed between the fingers. Upon cutting them, there escaped in abundance dark-coloured viscid blood, with which their substance from the apex to the base was completely penetrated. The cavity of both *pleurae* contained only a very small quantity of sero-sanguinolent fluid, which seemed to proceed from the vessels of the *parietes*, when divided by the scalpel.

The pericardium contained a small quantity of citron-coloured serous fluid. The heart, which was very voluminous, was particularly developed anteriorly, and towards the right side. The *vena cavæ* were distended and resisting. The right chambers of the heart were filled with blood, partly fluid, partly coagulated. The left chambers, as also the trunk of the aorta, were completely empty.

The intestines, which were distended with air, were of a deep black colour; but it was easy to perceive that this tinging was occasioned by the smallest venous branches being distended with blood. The stomach was full of food, the mass of which, already homogeneous by the digestive process, exhaled a pretty strong alcoholic odour. The colour of the mucous membrane it was not easy to characterise, but in consistence it was natural. The residue of the digestive canal presented nothing extraordinary. The liver and spleen were gorged with blood.

Hydatid Cyst at the base of the brain; Atrophy of the half of the tongue and palsy of the left half of the pharynx and larynx. (*Memoire sur Cas remarquable de physiologie-pathologique du systeme Nerveux, observé chez l'homme, par* M. Montault. Reported in the *Archives Generales*, Tome xxxi. p. 434. 1833.)—A man of 33 years of age having long worked at his occupation of weaver in low humid situations, after falling in 1828 a considerable height, and lighting on the posterior part of the neck, began to feel in the posterior and lateral parts of the head acute pains extending to the corresponding side of the neck. These pains caused sleeplessness, a sense of constraint and involuntary contractions of the muscles of the region, and afterwards great difficulty in speaking, so that at length the patient became unintelligible. After various fluctuations in the state of the patient, the pain became so intense that in September 1831, the motions of the head or the neck were impracticable, and the patient was admitted into the Hotel-Dieu under M. Dupuytren with the following symptoms.

The motions of the head on the neck were partly performed by the whole vertebral column. The size of the tongue was diminished. It was shrunk on the left side especially, and the diminution of bulk was more evident at the apex and middle part than at the base. The right side of the organ, on the contrary, was better nourished, and had acquired more strength. The left side, reduced almost to the two mucous folds which encase the muscles, was drawn to the right side by the muscles of that side, whenever the tongue was protruded, either by reason of the increased strength of the right side, or because the latter was no longer supported by the left side. The articulation of sounds was still and clear and distinct.

The successive application of sugar, sulphate of quinine, and hydrochlorate of soda, dissolved in small quantities of water, was employed to ascertain the changes, which might have taken place in the sense of taste, and it resulted from the experiments made that *tastes were distinguished by the left or atrophied side* of the tongue. M. Dupuytren was consequently led to conclude, that, of the three nerves distributed to the tongue, viz. the hypoglossal, glossopharyngeal, and lingual, the atrophy must depend upon some change in the hypoglossal or ninth pair of the old nomenclature, the twelfth of that of Soemmering; and combining with this the fact, that the intellectual functions and the motions of the extremities were unaffected, M.

Dupuytren inferred that the lesion of the nerve might exist at its emergence from the cranium, and not at its origin.

All the remedies employed produced little amelioration; and the patient left the hospital, and returned to it four times in the course of about four months, and quitted it the fifth time on the 24th March 1832.

On the 28th September of the same year he returned, and was placed under the care of M. Rostan. The patient then complained of permanent pain at the level of the articulation of the *atlas* and *axis*, and behind the mastoid process a small tumour was recognized. Deglutition began to become so difficult, that during drinking, a small quantity of fluid dropped into the larynx causing coughing and pain. The diagnosis given by M. Rostan was,—a fungous tumour of the *dura mater*. Hiccups, vomiting, obstinate constipation, nocturnal fever, and gloomy presentiments, were the principal symptoms observed during the month of October. The patient went out on the 6th of November.

On the 20th of December the patient entered the Hospital Cochin under M. Gendrin with the following symptoms. He continued nearly immovable in bed, in order to prevent the increase, he said in a voice almost extinct, of the pain in the neck. General sensibility was impaired over the whole of the left side of the body. Meanwhile the *aphonia* as well as the *dysphagia* went on increasing. The patient was compelled to spend whole hours in taking by suction for deglutition a spoonful of soup, the only nutriment which he preferred. Hiccup became incessant, appearing in epileptiform accessions. The action of the heart presented no extraordinary phenomena deserving remark. At length on the 12th January 1833, after swallowing some spoonfuls of soup in the manner already specified, the patient allowed his head to fall back on the pillow, and was dead.

Inspection.—Nothing remarkable was observed either in the substance or at the surface of the *cranium* of the membranes and of the brain. The cerebral substance was firmer than usual, and the ventricles were dilated by a very abundant transparent serous fluid. Between the left occipital *fossa*, the left hemisphere of the *cerebellum*, which was raised, and the spinal bulb, which was pushed to the right, was a cyst as large as a hen's egg, containing serous fluid and many hydatids. This cyst, passing to the depth of some lines in the spinal canal, gave off a species of appendage sinking into the anterior condyloid hole, and contained a hydatid which seem unable to overcome the resistance of this narrow canal. From the base of the cyst was detached a second process, which being involved in the anterior portion of the left *foramen lacerum posterius*, after passing through this opening and behind the muscular *fasciculus* known by the name of the *fasciculus anatomicus* of Riolan, was expanded into an *ampulla*, to below the superior extremity of the complexus and sterno-mastoid. This was the spot where the small tumour observed while the patient was under the care of M. Rostan had appeared. The two hydatiferous cysts, the one without the scull, the other within it, communicated by a sort of neck or contracted portion corresponding to the *foramen lacerum posterius.*

The lingual nerve was quite sound on both sides. The glossopharyngeal, pneumogastric, and spinal nerves on the left side, from their origin to their passage in the *foramen lacerum posterius*, differed in no circumstance from those of the opposite side; and it was the same with the hypoglossal or twelfth pair, to their passage in the anterior condyloid hole. But immediately after the emergence of these nerves, a remarkable difference was observed between them. The left hypoglossal nerve was atrophied or shrunk to less than two-thirds smaller than the nerve of the right side; and this atrophy extended to its divisions in the muscles of the tongue, and seemed to have been produced by the compression caused by the small appendage sent by the internal cyst into the anterior condyloid hole. The glossopharyngeal, pneumogastric, and spinal nerves of the left side, had in like manner been compressed by the portion of the cyst which extended into the *foramen lacerum posterius;* but of these nerves the glossopharyngeal only was more than a third smaller than that of the opposite side. The margin of the *foramen lacerum posterius,* the bony process by which it is bisected, the solid walls of the petrous portion of the temporal bone, dilated or compressed, were the seat of a species of detrition analogous to that produced by aneurismal cysts in the bones with which they are in contact.

On the left side, the muscles of the tongue, both intrinsic and extrinsic, were entirely attenuated, atrophied or wasted, with a few yellowish, soft fibres, as also those of the corresponding pillar of the *velum.* The *œsophagus* and *pharynx* did not appear altered in their structure; but the latter canal forcibly contracted, was reduced to the size of the little finger.

The ventricles of the larynx were filled with a creamy whitish matter which was recognized as the soup which the patient had attempted to swallow some instants before death.

This matter, of which a quantity was found in the trachea and bronchial tubes, was recognized as the evident cause of the sudden death of the patient.

The left vocal chord was atrophied. Neither the *vertebræ* nor the spinal chord in its investments presented any deformity or change.

M. Bouillaud agrees with the reporter of this case in thinking that the extreme difficulty in pronunciation was occasioned by the atrophy of the glossopharyngeal nerve, which by Sir C. Bell has been classed among the respiratory nerves, and those which concur to the phenomena of expression; and that the palsy and atrophy of the left side of the tongue, with continuance of taste, are explained on the one hand by the integrity of the lingual nerve, a branch of the fifth pair, in which this faintly appears to reside, and the atrophy of the hypoglossal nerve on the other.

The lesion of general sensibility observed in this case, M. Montault thinks may be attributed to the compression caused by the intra-cranial cyst, either on the upper part of the chord, especially behind, or rather upon the mesocephalon, viz. the annular protuberance.

The compression, and consequently the diminution in volume of the glossopharyngeal nerve, explains the palsy of the organs of deglutition. The hiccups, the *aphonia,* the entrance of the food into the air passages, and death, M. Montault attributes both to the atrophy of the vocal chord, and that of the left pillar of the *velum,* and the compression of the pneumogastric nerve in the *foramen lacerum posterius.* To demonstrate more positively this proposition, M. Montault cites two facts entirely new, namely, that palsy of the *glottis* may induce a very great or even an insuperable obstacle to the performance of deglutition.

In the course of the discussion, MM. Dumeril and Velpeau alone observed that the fact related by M. Montault was at variance with an observation of Armann, which tends to make the hypoglossal nerve be regarded as a nerve of taste, and with those of M. Magistel.

On the Chemical Characters of the Saliva, considered as a means of Diagnosis in Certain Affections of the Stomach. By Dr A. Donné. (*From the Archives Générales,* May and June 1835.)—The object of this paper is to show that, by comparing the morbid with the healthy state of the saliva, we may distinguish accurately between inflammatory and non-inflammatory affections of the stomach.

After some preliminary remarks, Dr Donné endeavours to ascertain the characters of healthy saliva, which was the more necessary to be done as physiologists are at variance on the subject. According to Magendie the quality of this secretion varies according to the time when the experiment is made. Before and after a meal it is acid, but during mastication alkaline, the acidity sometimes disappearing after the first mouthful of food. According to Tiedemann and Gmelin, the saliva and the mucus of the œsophagus are alkaline in every case not only in man, but in all animals where these fluids exist. M. Donné's notion is the same, for in numerous experiments instituted by him both in man and the lower animals, this fluid was always found alkaline, before, during, and after meals, when the functions of the stomach were properly performed.

Though there is not a perfect agreement between chemists in their different analysis of saliva, they generally attribute its alkalinity to the presence of alkaline lactates and hydrochlorates of soda, and from an examination of the crystals by the microscope, M. Donné is convinced that it contains also hydrochlorate of ammonia from numerous crystals of the form peculiar to this salt being easily recognized. This fact has been already pointed out by M. Raspail. In certain cases the saliva is acid, owing to a peculiar condition of the stomach, which it is M. Donné's object to show is indicated by this state of the secretion. On no occasion has he found the saliva acid when the appetite and digestion were good. When inflammation of the mucous membrane of the stomach cannot be distinguished from its *suburral* state, by decided characters drawn from the usual symptoms, such as the colour of the tongue, its coating, thirst, pain in the epigastric region, &c. it is clear that in the present state of science there are only two ways of ascertaining the truth, by observing the effects of remedies employed, and by examining the organs after death. Upon these two medicine may be said almost wholly to depend. In support of this view he cites the authority of M. Andral, who in his *Clinique Medicale*, has supported this doctrine, and pointed out the difficulty of distinguishing affections of the stomach.

For ascertaining the state of the saliva, M. Donné gives the following directions. Slips of test paper are to be cut an inch and a-half long, and three or four lines broad, some coloured blue by tincture of turnsol, others reddened by an acid. The former of course will detect the acidity, the latter the alkalinity of the saliva. One of these papers is to be placed on the tongue of the patient, who must retain it for some time in his mouth, taking care to moisten it. The blue paper being in general more sensible than the red, is in a second affected by the acid if it exists, while, on the contrary, it is advisable to leave the red paper in contact with the tongue for a minute or two, to produce the necessary effect. A more sensible reagent than turnsol may be employed, but the shades of difference are not then so well marked. When the saliva is in a healthy state, the red paper becomes blue, if not it is not changed. This is the first test to be tried. When the saliva is ascertained to have lost its alkaline character, it must be tested with the blue paper, when two things may occur; either the blue paper is not changed, in which case we may conclude that the saliva is neutral, or it becomes red, which marks the acidity of the secretion. In the former instance, the first degree of alteration is manifested, which commonly coincides with some derangement of the digestive functions. M. Donné has seen the saliva pass through all the degrees of acidity from the most feeble to the most decided, and those different degrees of acidity appeared to be most frequently proportioned to the degree of alteration of the stomach.

It may be necessary to observe, that simple contact with the saliva even when not acid, produces some slight alteration of shade in the blue paper referable to moisture. Every one knows that colours have not the same shade when dry as when moist, and a little experience will enable a man to distinguish this slight alteration from that produced by an acid. Besides the red paper will serve as a counter proof.

M. Donné directed his researches to determine whether the saliva alone which was in contact with the tongue was thus modified, that he might ascertain whether the acidity ought to be attributed to the thickened mucus so frequently covering the tongue, rather than to the saliva itself. By placing, however, the test papers in contact with all points of the buccal cavity, under the tongue, and on the internal parietes of the cheek, he found always that it was the saliva that was altered in the cases to which he alludes.

When the tongue of the patient is dry and covered with a black, thickened, parched coat, it is difficult to detect the characters of the saliva, which is as it were suppressed, or dried up by evaporation, in proportion as it reaches the mouth. In such cases, by moistening with a little water the slip of paper before placing it on the tongue, the chemical character may be ascertained from the thick and gluey covering of this organ.

By the same process M. Donné has ascertained the state of the different fluids of the body in health and disease, but his views he reserves for a separate work, which he is preparing for publication.

In support of his doctrine, M. Donné brings forward a selection of eight cases, of which we can merely make room for a short outline. In the first case there was *bronchitis* with symptoms of severe fever, and *acidity of the saliva*. Blood-letting and emollients were tried in vain, and the patient died. On inspection, numerous ulcerations with vivid redness were found in the last portion of the small intestines; the stomach was distended with gas; the mucous membrane dotted, softened, raised like a pulpy mass on the great *cul-de-sac;* in other points the vessels were filled with a fine dark-coloured injection. Although the inspection took place only twelve hours after death, a number of very animated animalcules were found in the bile. The second case was one of continued ataxic fever. *The saliva was acid.* The cerebral substance was injected, there was effusion into the ventricles, and injection and softening of the mucous membrane of the stomach to some extent. The third was one of continued fever, with delirium, stupor, *and acidity of the saliva.* Treated with blood-letting and emollients it proved fatal, and after death the glands of Peyer were found injected and ulcerated, and the mucous membrane of the stomach injected and softened. In the fourth case there was stitch in the side, shivering cough; pleurisy of the left side, pneumonia of the right; nausea suddenly supervening, vomiting, diarrhœa. The treatment was strictly antiphlogistic, and blood was repeatedly abstracted both locally and generally. After death purulent effusion was found in the left pleura; circumscribed hepatization of the superior lobe of the right lung; vivid injection of the stomach; softening and almost complete disorganization of the mucous membrane, &c. There was neither ulceration nor even marked redness in the intestines.

Besides these four cases exhibiting the coincidence of acidity of the saliva with lesion of the stomach, usually attributed to inflammation, M. Donné alludes to one of phlebitis supervening on bleeding from the arm in pneumonia. The saliva, which had remained alkaline in the first part of the disease, suddenly became extremely acid at the same time that phlebitis manifested itself, and continued so till death. The stomach was not found red, but the mucous membrane was considerably thinned and softened in the great *cul-de-sac.*

Having given four cases in which the acidity of the saliva marked disease of the stomach, M. Donné cites four in which the effects of the treatment, and the progress of the disease, were connected with the state of the saliva. Into these it would be needless to enter, the fact being the same in all; as the disease of the stomach increased, the saliva became more and more acid, and when it abated the acidity decreased, till on the disappearance of every morbid symptom the secretion became alkaline again.

To complete the proof of the truth of his doctrine, M. Donné acknowledges that it would be necessary to bring forward cases in which symptoms of a disordered or saburral state of the stomach were attended by an alkaline state of the saliva. He has, however, met with only one case in which the treatment was so directed as to verify his diagnosis, and this case decidedly supports his views.

A curious case is detailed in support of his opinion that acidity of the saliva depends on disease of the stomach. A girl in a fit of love and despair attempted to poison herself with a glass of *eau de javelle*. Vomiting ensued, the tongue became red and dry, there was little pain in the epigastric region; but the saliva was very acid. As she recovered, the acidity disappeared, the saliva became neutral, and when the cure was completed it was perfectly alkaline.

M. Donné alludes to many other cases in support of his views. When the disease is unaccompanied by gastric inflammation, the saliva remains alkaline; but very frequently diseases, the primary seat of which is at a distance from the stomach, are complicated with gastric symptoms, and then the saliva is invariably affected. To several cases of this kind M. Donné alludes.

THERAPEUTICS AND MATERIA MEDICA.

On the employment of the alcoholic extract of Monkshood (*Aconitum Napellus*) *in the treatment of acute articular rheumatism.* By Dr Lombard, Physician to the Civil and Military Hospital of Geneva (*Medical Gazette of Paris.*) It is well known that the physiological properties of the monkshood are very energetic; and this circumstance led Storck and others to expect very considerable therapeutic effects from its use in the alleviation or removal of various painful diseases. These expectations trial has not altogether verified; and the failure has been generally ascribed to the improper mode of preparing or exhibiting the active principle of the plant. Dr Lombard, aware of a fact well known to pharmacologists and physicians,—that the ordinary extract is often completely inert, either in consequence of the large proportion of amidine and vegetable matter by which its active principle is diluted, or in consequence of an improper mode of preparation, thought of employing an extract prepared by alcohol. The expressed juice of the plant, subjected to slight boiling in order to coagulate the vegetable albumen, was evaporated in a sand-bath, treated with alcohol, filtered, and then again evaporated at a moderate temperature. In this method the volatile principles were not dissipated, as in the ordinary preparation of extracts; and the active principle, which, according to the opinion of some chemists, appears to be destroyed by heat, underwent no disagreeable modification. The result showed that these precautions were not useless, as he obtained by the extract thus prepared remarkable results now to be detailed, while the majority of authors have represented the extract of monkshood to be inert, and incapable, even in a large dose, of producing therapeutic effects. The patients treated by Dr Lombard experienced marked effects, and were cured rapidly and without accident.

Case 1st. M. G., in habitual good health, above 60, having never suffered any gouty or rheumatic affection, was attacked with acute pain of the articulations of the left wrist and right shoulder. The integuments were red and swelled, and the pain was aggravated by motion and pressure. These symptoms continued stationary during eight days spent in mercurial and opiate frictions. During the second week, large doses of tartarized antimony and blisters were advantageously employed for the affection of the wrist, which partly disappeared. But the pain of the shoulder continued as intense as ever,—aggravated by pressure and motion, and impeding sleep. The alcoholic extract of monkshood was administered in the dose of half a grain three times daily.

The first night the patient slept better than heretofore; the motions of the arm were more easy, and the pains were abated. Next day the pains were so much abated that motion was almost complete, and the patient was desirous to resume his occupation of copyist. The extract was continued in the same dose; and the third day of the administration of the extract, and the nineteenth of the disease, pressure caused no pain, and the motions of the arm were nearly as free as those of the other.

No sensible evacuation, no sweating, vomiting, or diarrhœa took place; and Dr Lombard imputes the cure, which was both rapid and permanent, to the specific effect of the aconite on the disease of the articulation.

Case 2d. Vittel, a female of 52, was admitted on the 18th December. She had some years previously laboured under an attack of acute articular rheumatism, which confined her to bed for months, and obliged her long to walk on crutches. She had since been well, excepting that for the last three weeks she had suffered acute pain of the left shoulder-joint, which for two days had been so severe as to interrupt motion, and which was aggravated by pressure on the anterior region. The functions of digestion and circulation were natural. Leeches applied to the pained part, and opiate remedies produced no relief; and next day, Dr Lombard prescribed a grain of alcoholic extract of aconite four times daily.

Though eight grains were given by mistake, no bad effect ensued; and he therefore ordered two grains every second hour; after which, though the pains were not much abated, the motions were more easily effected. The third day the pains were sensibly abated, and the patient could dress herself, and the part bore pressure. The cure was complete in two days more.

In this case from twenty to twenty-four grains of alcoholic extract of aconite were taken in the course of seventy-two hours, with no other physiological effect than that of causing frequent alvine discharges, and abating pain, and the therapeutic effect of removing the rheumatic affection.

Case 3d. A white tinsmith, aged 30, had been affected for six days with acute pains of both tibio-tarsal articulations, for four days with painful swelling of both knees, and the night before admission with pains of the haunch-bones. The parts most painful were the ligaments and fibrous parts, and the pain was aggravated by pressure. The appetite was gone, and there was febrile reaction. Half a grain of the alcoholic extract was ordered at first five times then six times daily.

At the end of forty-eight hours the pulse, which had been 100, was only 80, the *anorexia* was gone, and the pains disappeared from all the parts previously affected, going to the great toes which were red and swelled. The medicine was continued, and carried to the extent of six grains in twenty-four hours; and on the fourteenth day of the disease, or the fourth of treatment, the articulations were free from pain, and moved easily, and the cure was completed.

Case 4th. M. P. a laundress, aged 30, who three years before, upon occasion of weaning an infant, had suffered much from articular rheumatism, was again, upon occasion of weaning, attacked with exactly similar pains in the chest, head, and afterwards the extremities,—attended with fever and confining the patient to bed.

On the 9th day Dr L. found the pulse 90, the skin hot, the left knee swelled, hot, and very painful on pressure and motion; both hips also painful. Notwithstanding the presence of the *catamenia* he ordered half a grain of monkshood every second hour, to alleviate the intensity of the pain. The first night sleep returned, and the pains were considerably abated; the motion of the hips was more free; but both knees were still painful. A grain was ordered every second hour.

The next day, the thirteenth of the disease, the articulations of the shoulder, elbow, wrist, and left hand were affected with acute pains and swelling. Some rest, however, was enjoyed during the night; sweating was abundant, menstruation almost completed, the appetite good, digestion easy; and the pulse, which before was not above 80, was now 96. Three grains of aconite every two hours were prescribed.

The shoulder and elbow were void of pain; but the wrist continued swelled and sore. In the hand the articulations of the thumb only were swelled, and painful on pressure. Appetite was rather impaired, the tongue white, no motion, the pulse 96. The extract continued in the same dose.

Next day, when the motions of the wrist and feet only were impeded, and the right shoulder a little painful, with abundant sweating during the night, six grains of extract every two hours were ordered.

Next day the patient was free from pain. But in consequence of walking about, perspiring and scarcely clothed, for two hours, the pain and swelling of the joints of the arm and right hand returned with increased intensity, causing frequent screaming. Dr Lombard prescribed first six grains, and next day nine grains of the extract every two hours; and though the sufferings of the patient abated now more slowly than formerly, in the course of five or six days the pains and swelling disappeared, and there remained only some stiffness and impaired motion.

In this case the author remarks, that the principal symptom resulting from the use of the monkshood was the copious and almost constant sweating. This he does not regard as a uniform physiological result of the use of the drug. At the same time we must remark, that in the few cases in which we have administered the ordinary extract of this plant, we have observed it produce this physiological effect on the economy.

Case 5th. Joseph Beck, a carpenter, of 30 years of age, was admitted, after six weeks of pains felt in the loins, the shoulder, and, within the last three days, in the right knee, which was also swelled and fluctuating. The pulse varied from 96 to 100; the skin was covered with profuse sweating, and the tongue was white; but the other functions were natural.

Dr Lombard ordered half a grain at first three times, then six, eight, and ten times daily. At the end of the third day the fever and sweating had disappeared, with abatement of the pains, and diminution of the swelling of the knee. The dose of the medicine was then augmented to six and seven grains daily; and on the sixth day of the treatment, the pains of the collar bone and knee had completely ceased, and the gait was not constrained by the articular fluid, which, though partly, was not entirely absorbed. A little pain and swelling of the left wrist, which still continued, soon disappeared.

A moist atmosphere, however, reproduced, at the close of fifteen days, a degree of *lumbago* and darting pains of the knee, which resisted the use of vapour baths. Dr Lombard ordered again the extract of monkshood in the dose of from *twelve* to *eighteen* grains daily, and next day remarkable amelioration took place.

Case 6th. Madame B., 59 years of age, laundress, who had three years previously an attack of *sciatica*, which yielded to blisters, was again attacked with pains and swelling in all the joints, but especially those of the right thumb, with some scattered redness of the integuments. There were no febrile symptoms. Dr Lombard ordered first one grain of extract of monkshood every two hours, then successively *two*, *three*, and *four* grains and *a-half* at the same rate.

The first and second pills produced squeamishness and vomiting. The subsequent ones showed no action either on the stomach or the bowels. The other effects of the drug were giddiness, dazzlings, and great vivacity of the impressions, which the patient compared to the effect of the *magic lantern*, which appeared as soon as the eyes were shut. The local effect on the pains was manifest after the first day by remarkable abatement; and at each increase of the dose, the patient was immediately sensible of its sedative action. The swelling abated less rapidly than the pains; for the back of the hand and the small articulations were still œdematous when all pain was gone.

On the sixth day of the disease, and the third day of the treatment, the thumb was void of pain. On the tenth day, all the articulations except those of the middle and ring finger were well. Lastly, two days after, viz.

the twelfth day, the patient felt only a little stiffness in the articulations of the hand, but was able to resume her employment.

This case showed, *first*, that the stomach, though at first intolerant of the extract of monkshood, eventually may bear considerable doses of it without inducing derangement of its functions; *secondly*, that in some cases the usual symptoms of derangement of the nervous system may be developed, —for instance giddiness, flushings, and spectral illusions, with slight intoxication; and *thirdly*, that the therapeutic effects in alleviating and removing the rheumatic symptoms abated in proportion as the system was put under the influence of the drug.

From these and similar cases, Dr Lombard thinks that he is entitled to infer, that the alcoholic extract of monkshood possesses a specific virtue in dispelling rheumatic fluxions which have been fixed in the articulations. He thinks, however, that it does not destroy the principle of rheumatism, since the articulations were seen to be attacked while the patient was taking it in considerable doses. But without exercising a preservative or prophylactic action, it not less effectually cures the rheumatism, by neutralizing its morbid influence, wherever it tends to form itself. The action of monkshood upon articulations attacked with acute rheumatism evinces itself speedily; and patients have often assured Dr Lombard, that they have felt an abatement of the pains in the course of one hour. Generally, however, the sedative effect is evident only after the lapse of several hours. The antiphlogistic action, which opposes congestion and swelling, whether within or without the articulation, is usually slower. From twelve to twenty-four hours form the most common period for this improvement; and sometimes it does not take place in less than from thirty-six to forty-eight hours. In two of the cases now recorded the monkshood acted more promptly on the large than on the small articulations. It is also observed that swellings of the elbow and wrist, which had ensued several days after those of the phalanges, were dispersed long before those of the latter joints. The influence of the monkshood, also, Dr Lombard regards as not confined to the vicinity of the articulations, but extending to the synovial membrane, and contributing powerfully to excite the absorption of fluids effused within them in rheumatic cases. (Case 5.)

Dr Lombard farther thinks that the phenomena of the cases now detailed are sufficient to refute the opinion of Baron Storck, that monkshood is a sudorific. In from eight to ten cases of articular rheumatism treated by the author with this drug, in one only was its administration followed by profuse sweating. In all the rest the cure was effected without sudorific action; and even in the fifth case, the exhibition of the drug put a stop to sweatings which had lasted for fifteen days.

The influence of monkshood upon the nervous system is remarkable. As soon as the doses are in any degree considerable, Dr Lombard always remarked a certain excitement of the brain, distinguished by nocturnal visions, a degree of gaiety, and much vivacity of impressions. The circulation of the brain appeared to be modified so as to produce the fits of giddiness, dazzling, and hot flushes of the face; but in no case did he observe any disagreeable effects from the administration of the monkshood, though he administered it in the dose of a *drachm and a-half* in twenty-four hours.

The digestive functions are not particularly modified by this drug. In most of the patients treated according to this method, Dr Lombard observed the appetite return after the second or third day, and continued during the whole period of treatment. Some patients complained of a bad taste in the mouth, and had white tongue; but they nevertheless continued to take food, and these symptoms soon disappeared. The stools were not increased in frequency except in one case, where this occurrence rendered it necessary to suspend the use of this medicine, though only after the complete cessation of the rheumatic symptoms. The urinary secretion was changed neither in quality nor quantity in the cases treated. Since it appears from these facts, that the different functions were in no manner modified by the exhibition of the extract of monkshood, Dr Lombard infers, that we must regard it as neither a derivative nor a sudorific, but as a specific against rheumatic congestions, the action of which operates upon the fibrous and tendinous parts enclosing the articulations, as well as upon the synovial membrane lining them.

As to the dose and mode of exhibition;—Dr Lombard found it unnecessary to combine monkshood with any other medicine, and he therefore gave it alone. He allows nevertheless that its union with opium or any other medicine indicated in the particular case, may contribute to render its action more sure and suitable. The author began with small doses, such as *one-fourth* or *half a grain,* two or three times a-day. As the exhibition of large doses was nevertheless quite inoffensive, Dr Lombard thinks that we may begin with half a grain every two hours, and increase it successively to *six* or *nine* grains in the same space of time. It does not appear probable that it will be requisite to proceed to the latter quantity, which Dr Lombard has not exceeded; but he is of opinion that it may be carried beyond that amount, if a judgment can be formed from the harmlessness of the dose.

Dr Lombard concludes with the following general deductions.

1. The alcoholic extract of monkshood is endowed with a specific property against acute articular rheumatism.

2. It puts a speedy pause to the pains and swelling, and disperses the synovial effusions contained in the articulations attacked with acute rheumatism.

3. This medicine does not act as a derivative upon the skin or the intestinal canal.

4. Administered in a large dose it produces intense stimulation of the brain, and appears to modify its circulation.

5. The alcoholic extract contains the active principle of monkshood, at least as to its anti-rheumatic properties.

6. It may be given in increasing and minute doses from six grains to a drachm and a-half in the course of twenty four hours.

On the Bebeeru Tree of British Guiana, and Sulphate of Bebeerine, the former a substitute for Cinchona, the latter for Sulphate of Quinine. By Sir ANDREW HALLIDAY, K. C. H., F. R. S. E., Deputy-Inspector General of Army Hospitals. In a Letter to the Editor.—I am desirous of directing the attention of the profession, through the medium of your widely circulated pages, to a discovery which I hope will not only prove of consequence as a most valuable addition to our list of important remedies, but which also may become of some consideration to this country as an article of commerce. I therefore request you will give insertion to this letter in your next Number.

Hugh Rodie, Esq. a Surgeon in the Navy, was, like many others in his situation, placed on the half-pay list at the end of the last war, and having relations in, or connected with, the colony of British Guiana, he fixed himself in the latter end of 1814 at Demerara, as a general practitioner in medicine. Mr Rodie, I have reason to know, was and is a very excellent practical chemist, and was altogether much attached to the study of natural history, so much so, indeed, that, although he very soon obtained a most extensive and lucrative practice, he preferred the solitude of the woods, where he could study nature at his leisure, to watching the progress of disease in the chambers of the sick at Demerara. He obtained a grant of land in the interior of the colony, and some years ago commenced wood-cutter. Thus far for the history of my esteemed friend, and now he shall speak for himself.

In a communication which he made to me last winter he states, " That soon after he settled in British Guiana, (1814–15), the French government sent a deputation of royal academicians to the colony of Cayenne, to discover the *Jesuit's Bark* tree, or a substitute for it; and it was currently reported they had succeeded. But that he (Mr R.) considering that he was nearly in the same parallel of latitude in which that valuable tree is found, and seeing that the sulphate of quinine, which was then selling at 18s. per drachm, was frequently adulterated, and estimating, too, the importance of that medicine, without which our fleets and armies could not exist within the tropics, he turned his whole attention towards the discovery of the cinchonas in the wide spreading forests that surrounded him."

"After many fruitless trials," (continues Mr Rodie,) "I discovered in the bark of a magnificent variety of the laurel abounding in the interior forests in this country, and called by the native Indians *Bebeeru*, all the sensible qualities of the cinchonas. I therefore subjected it to analysis, and found that it also possessed the chemical properties of the officinal bark, with only some slight shades of difference, and particularly in its habits with the acids." A concentrated solution of what I would beg leave to call the *Sulphate of Bebeerine*, was prepared and first exhibited in intermittent fever, and it was found to possess the medical qualities of the quinine in a very eminent degree. It seemed, however, to be more directly febrifuge, and to act rather as what is understood by a specific, than by exciting a counter-morbid action in the system, which it is well known the exhibition of quinine in tropical fevers very frequently induces. "The trials that have hitherto been made of the sulphate of bebeerine have been very limited; but they have hitherto been very successful. I tried it in a great many cases of intermittent and remittent fever, and found it equally efficacious with sulphate of quinine, nay it frequently cured the fever when quinine had failed. I have communications from many eminent practitioners in the West Indies, and they all assure me that they have found the sulphate of bebeerine as valuable a remedy, if not more so, as the sulphate of quinine; and that it had never produced any irritation of the stomach, nor that alarming symptom of deafness and determination to the head which so frequently follows the exhibition of the quinine in large doses."

I was further informed, that, from the want of a suitable apparatus, Mr Rodie had only been able to prepare a very limited quantity of his concentrated solution, and he could send me only a very small supply at the time I applied to him; but when the value of this remedy has become more generally known, it will gradually find its way into practice, and the bark prepared and packed in Guiana, should be sent home in order to have the bebeerine manufactured properly, and in sufficient quantity in our laboratories here. At present the tree is only felled for the value of the timber, and thousands of tons of the bark are annually destroyed.

Mr Rodie found so much difficulty in crystallizing the sulphate of bebeerine, that he has hitherto prepared it for use in solution with a little excess of acid; and twenty minims of this solution is a sufficient dose. It has now been pretty generally distributed throughout the West Indian colonies, and before I left Demerara, I sent to Sir James M'Gregor a small box of what was delivered to me, which he has kindly said he will distribute to the different stations of our army, in order to ascertain its effects. I am convinced that, as a febrifuge, it is far superior to any we as yet possess, and with regard to what has already been proved with the ordinary barks, we find that quinine is more powerful as a febrifuge than cinchonine, in the proportion in which it is less easily crystallized, so bebeerine, as being still less crystallizable than quinine, is found to be more efficacious as a remedy in febrile diseases. Mr Rodie last year presented a memorial to the Governor of British Guiana, soliciting a monopoly of the bark for a certain number of years as a reward for his discovery, and for the expense incurred in bringing it to perfection. His Excellency was pleased to refer this memorial to me, to report upon the alleged good effects of the new remedy. In so far as I have been able to pursue the inquiry I have found Mr Rodie's assertions more than proved, and I anticipate the day when this valuable medicine, the produce of our own colony, will supersede the use of all the Spanish barks. I have not yet forwarded my report to Sir James Carmichael Smyth, but I think I have already obtained sufficient evidence of the value of Mr Rodie's discovery, to warrant my recommending his being granted the boon he solicits, which is a monopoly of the bebeeru tree in the colony of Demerara and Essequibo for the next twenty years.—I have the honour to be, Sir, your's, &c. ANDREW HALLIDAY.

Edinburgh, 23d August 1835.

The small Black Myrobalan. The Black Salt of the Indian and native Indian practitioners. In our account of the clinical illustrations of Mr Twining, (p. 155) having occasion to mention these articles of the *Materia Medica* employed in the East, we promised to explain more fully than could be there done, the nature of these articles.

The term *Myrobalanus* [Μυροβαλανος,] or ointment-nut (*glans unguentaria*) was originally used by Aristotle to designate the fruit of a particular species of tree not well defined, but believed to be aromatic, and has been adopted by Gaertner to designate a genus of trees to which Linnaeus applied the generic name of *Terminalia*, a term which has been adopted by Roxburgh, Ainslie, and some others. It belongs to the natural family COMBRETACEAE, or, as they have been named by Mr Robert Brown, MYROBALANEAE. They belong to the class and order *Polygamia Monœcia*, and are distinguished by the leaves terminating their branches in tufts. They grow within the tropics, and produce fruits in a *drupa* enclosing an osseous monospermous nut.

The black Myrobalan used in India, which is known in the Basars by the name of *Jungheia Haritakee*, or *Zungi Hur*, is the small, black, shrivelled, and dried half-grown fruit of the *Terminalia Chebula*. It is said to have the bulk of a date, to be ovoidal or pyriform, marked with ribs, some more prominent than others. Its transverse section presents exteriorly a greenish rhind about *one* line thick, inclosing a yellowish nut from four to five lines in diameter, and as hard as wood, with a hole or cavity in the centre, either empty or containing spongy matter, the debris of the kernel. In the small black Myrobalan, which appears to be generally the unripe *drupa* of the species now mentioned, the cavity is empty. Its taste is acid, nauseous, disagreeably, but not intensely bitter, void of odour, and tinging the saliva green.

As to physiological properties, it is said to be a mild and warm purgative, tolerably certain in its aperient effects, and yet possessing very considerable tonic properties. It is probably to this combination of laxative with gently tonic properties that it owes its reputed success in many diseases of debility in India. It is said, both by Dr Ainslie and Mr Twining, to be useful in several chronic visceral diseases, attended with debility, (what visceral disease is not?) where mercury does not act favourably. The dose is from ten to thirty grains.

Mr Twining expresses surprise that a medicine possessing properties so useful should be so little used in many of the *Cachexiæ* that prevail in low damp situations in Europe. But it appears to be unknown to him, that, according to the testimony of De Vigo, Gale, Woodall, and their cotemporaries, it was much used in Europe during the sixteenth and seventeenth centuries; but appears gradually to have fallen into desuetude.

It must be admitted, that whether it possesses direct therapeutic powers or not, its use may often be followed by beneficial results, by merely precluding or superseding the operation of mercury.

The *Black Salt* or *Kala Nemuk*, which is usually associated in exhibition with the Myrobalan, is a mixture sold in the bazars for medicinal purposes among the native practitioners. According to an analysis by Mr Accum, one ounce of it is composed, of

Black oxide of iron, -	6 grains.	Muriate of lime, -	12
Sulphur, - -	14	Muriate of soda, -	144

Loss, 4 grains.

The dose of the Black Salt is from ten to twenty grains. Both remedies are much used in the removal of enlargements of the spleen and other visceral obstructions contracted by a residence in miasmatic districts.

The Royal College of Physicians of Edinburgh have established a Museum of Materia Medica; and as the object is to have a complete collection both of the ordinary and more rare articles employed in the Practice of Medicine, and as every attention will be given to insure their preservation and exhibition, the Royal College trust, that gentlemen, either professional or occupied in the pursuit of natural history in the colonies and similar favourable situations, will find this a useful and convenient receptacle for such articles as they may present to the Royal College.

GRADUATIONS AND SURGICAL EXAMINATIONS.

Medical Graduations at Edinburgh.—On the 1st of August 1835, the Senatus Academicus of the University of Edinburgh conferred the Degree of Doctor of Medicine on the following gentlemen, in number one hundred and seventeen, after having gone through the appointed examinations, and defended publicly their Inaugural Dissertations.

Of Scotland.

Arthur Anderson, on Absorption.
John Arnott, on Erysipelas.
Jas. Anderson, on Continued Fever.
G. W. Bell, on Delirium Tremens.
Walter Scott Carmichael, on Phthisis Pulmonalis.
William Carson, on the Pathology of Phlegmatia Dolens.
G. C. Child, on Injuries of the Head.
James Cornwall, on Excision of the Joints as a substitute for Amputation.
James Cox, on Morbid Poisons.
Samuel Currie, on Aneurism.
James Dunsmure, on Scarlet Fever.
Thomas Duncan, on Animal Heat.
Andrew Fergusson, on Hepatitis.
David Deas Foulis, on Phlegmatia Dolens.
Alexander Harvey, on the Function of Nutrition
William Home, on Acute Anasarca and Diseased Kidney.
Henry Johnston, on Pleurisy.
Jas. T. O. Johnston, on Ophthalmia.
Thomas G. Johnston, on Erysipelas.
William Woods Johnston, on Acute Peripneumonia.
George King, on the Pulse.
Kinloch W. Kirk, on Superfœtation.
William Kirkland, on Hydrocele.
Andrew Cairncross Livingston, on Acute Hydrocephalus.
Thos Macknight, on Expectoration.
Duncan Macpherson, What are the agents concerned in capillary circulation?
Andrew Millar, on Erysipelas.
David D. Manson, on Scarlatina.
George T. Mitchell, on Tetanus.
David Monro, on Aneurism of the Thoracic Aorta.
Donald Monro, on Angina Pectoris.
John Kinloch Ogilvie, on Morbus Coxarius.
Alexander Peddie, on Erysipelas.
John H. Pollexfen, on Peritonitis.
J. Ramage, on Adhesion of Wounds.
John Spens, on Rheumatism.
John Thomson, on Peritonitis.
William Troup, on Stricture of the Urethra.
Thomas Graham Weir, on Hydrocephalus and its Treatment.
William Wood, on Diseases of the Female Breast.

Of England.

Theodore Boisragon, on hypochondriasis.
Hatton Turner Bowle, on Syphilis, with Remarks on the Mercurial and Antimercurial Treatment.
Robert Chevallier Cream, on the Chemical History and the Physiological and Therapeutical Action of Tartarised Antimony.
George Ebenezer Ely, on Dropsy.
William C. Engledue, What Evidence have we that the External Senses can be Transferred to other parts of the Body, as is said to occur in Somnambulism?
William C. Evans, on Bronchocele.
William Giffard Everett, on Epilepsy.
Edward George, on Asphyxia from Submersion.

John Griffin, on Varicose Veins.
Charles T. Hamilton, on Erysipelas.
W. H. Hooper, on Delirium Tremens
E. James, on Œdema of the Glottis.
James Kendrick, on the Dependence of Diabetes Mellitus on Disease of the Stomach and Intestines.
Thomas Carey Laver, on Burns.
David Leitch, on Respiration.
W. Macgill, on Retention of Urine.
George Merryweather, on some of the Mutual Relations of the Atmosphere and Ocean.
Richard Parnell, on the Causes of Death by Asphyxia.
Astley Purton, on Croup.
Fred. Row, on Phthisis Pulmonalis.
John G. Seagram, on Pericarditis.
Robert Shean, Observations on the most Prevalent Diseases of British Soldiers in the East Indies, viz :—Febris Continua Communis, Febris Remittens Biliosa, Hepatitis Acuta, Dysenteria Acuta.
Thos. H. Starr, on Diabetes Mellitus.
G. Strong, on Purulent Metastasis.
James Surrage, on Puerperal Fever.
R. J. Traill, on the Modus Operandi of Remedial Agencies in the Treatment of Inflammation.
John Tucker, on the Physiological and Therapeutic Operation of the Solaneæ.
James Tunstall, on the Irregularities of the Secreting Function.
J. K. Vade, Some Observations on Disorders of the Intelligence.
G. Vaux, on Pathology and Treatment of Cerebral Apoplexy.
William Wells, on Pericarditis.
G. A. F. Wilks, on the Nature of Respiration, and its Connection with the Nervous system.
Thomas Wilstrop, on Ascites.
Peter Wood.*

Of Ireland.

F. Anderson, on Ischuria Renalis.
Thos. Andrews, on the Circulation and the Properties of the Blood.
William Andrews on Apoplexy.
Samuel Bryson, on Peritonitis.
R. W. Cooke, Practical Remarks on some Injuries of the Head.
Joseph H. Corbet, on Menstruation.
Edward Paoli Drew, on Acute Hydrocephalus.
Hugh Fitzpatrick, on the Pulse.
Jn. Fitzsimons, on Continued Fever.
John Jeffries, on Aneurism.
Richard Kennedy, on Rubeola.
Francis James Lynch, on the varieties, consequences, and Treatment of Burns.
Charles Mackay, on Phthisis Pulmonalis.
Augustus Macullagh, on Syphilis.
Patrick O'Connor Meade, on Hydrops Abdominis.
William L. Methven, on Hepatitis.
John Thos. Monypenny, on Ascites.
John Morrison, on Inflammation of the Liver, and on the Seat and Connections of the Viscus.
Edw. Nevil, on Sensibility as a General Law of Organic Structure.
Harward O'Farrell, on Iritis.
John Peppard, on the Functions of the Brain.
Joseph S. Prendergast, on Clap.
Andrew Quinlan, on Aneurism by Anastomosis.
James Reed, on Bronchitis.
Robert Rogers, on Aneurism.
David Ross, on Injuries of the Head.
James Ross on Inflammation.
James Maxwell Saunders, on Delirium Tremens.
David Scannell, on Hydrocele of the Tunica Vaginalis.
Epaphroditus Young, on Erysipelus.

Of Malta.

Jos. Adams, on Delirium Tremens.

Of Persia.

Alexander Campbell, on Wounds of the Thorax.

Of the East Indies.

William M. Finch, on Pneumonia.
D. A. Carnegie, on Typhoid Fever.
Wm. G. Prichard, on Hypertrophy, with Dilatation of the Heart.
William Roxburgh, on Climate.
John Smith, on Uses of the Liver and its Secretions.

Of Jamacia.

Ts. Clarke, on Capillary Circulation.

Of Canada.

Aaron Hart David, on Infanticide.
Edw. Quincy Sewell, on Dyspepsia.
Stephen Charles Sewell, on Intermittent Fever.

Of Bermuda.

Henry J. Tucker, on the Relations of Life and Organization.

Of Spain.

John Llacayo, de Definitione seu Natura Febris.

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* Received his Degree on 22d November 1834.

Surgeons' Hall, Edinburgh, 1*st September* 1835.—Since 31st August 1834, the following Gentlemen have offered themselves as Candidates for the Diploma of the Royal College of Surgeons of Edinburgh, and after producing satisfactory evidence that they had completed the course of study prescribed by the College, have been admitted to examination, and found fully qualified to practise the arts of Anatomy, Surgery, and Pharmacy, and have received Diplomas accordingly.

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